CAA JOURNAL

DOCUMENTS
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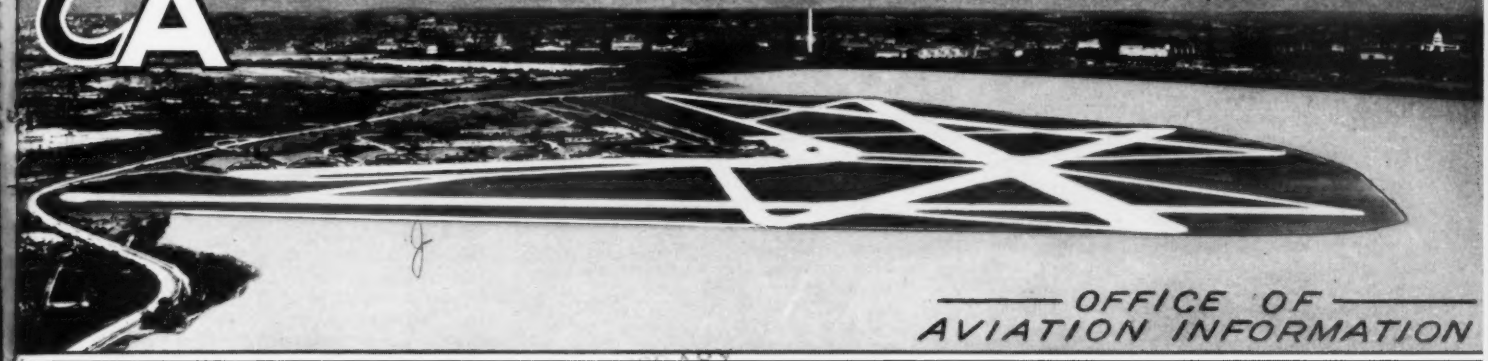

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CAA Reviews Aviation in 1945; Industry Prepares for Boom

Civil aviation has entered a period of tremendous expansion, in which the Federal Government is playing a necessarily important role, T. P. Wright, Administrator of Civil Aeronautics, said in reviewing the year's developments.

He reported that the end of the war had unloosed great pent-up interest in all phases of civil flying activity, primarily evidenced in the fact that student pilot certificates issued during 1945 totaled 70,000, compared with 51,000 for 1944, and 30,000 in 1939, the last normal pre-war year.

Manufacturers of personal planes indicated they had orders totaling 40,000. Best production of civil aircraft in any earlier year was 6,844 for 1941. Even during 1945, as a result of release of surplus military planes, the number of registered civil aircraft increased from 22,000 to 30,000.

Passenger Traffic Increases—Airlines placed orders for some 500 new transport planes, which would more than double the existing fleet. Need for the equipment was demonstrated by a rise to 7,700,000 in the number of passengers carried in domestic operations during 1945, from 4,668,000 in 1944, and 1,876,000 in the pre-war year 1939. Pending receipt of new equipment, the airlines handled the increased business with surplus Army transports converted to civilian use.

In its contributions toward resumption and intensification of civil aviation activity, the Civil Aeronautics Administration emphasized the development of personal flying on a mass scale, according to Mr. Wright. Assistants for Personal Flying Development were named in the regions and in Washington, and an industry advisory committee on non-scheduled flying was appointed and met regularly.

Pilot Examinations Simplified—To simplify the process of becoming a private pilot, the CAA authorized physical examination by any registered doctor, dropping the previous restriction to designated examiners. The CAA cooperated with the Civil Aeronautics Board in formulating new, condensed requirements for the private pilot written examination. Detailed knowledge of navigation and meterology no longer is called for. The examination is limited to air traffic rules and general operation rules. This information is compactly presented in Parts 60 and 43 of the Civil Air Regulations.

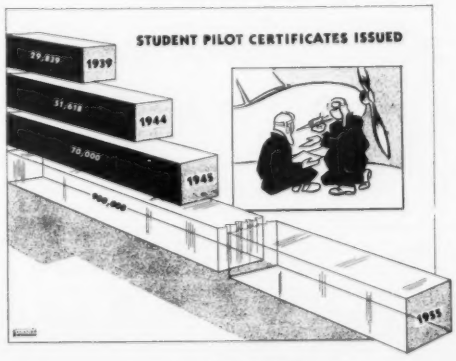
Also aimed at aiding private flying was the CAA air-marking program. Communities were stimulated and guided in applying uniform methods of marking so that they can be recognized from the air.

Airport Program—Assistance was given to state and local governments and private interests in developing plans for airports in line with the CAA national goal of doubling the present number of fields to a total of 6,300. As the year ended, a conference committee was harmonizing differences in bills passed by both Houses of Congress authorizing the CAA to manage a large Federal-aid airport program. By far the largest number of projects under such a program, according to CAA plans, will be smaller fields for personal flying and local air service.

Thousands of discharged Army and Navy airmen turned to the CAA for guidance in entering civil aviation. Even before leaving the service, military pilots were given CAA certificates at a rate in excess of 1,000 a week. To assist in this job of "human reconversion," the CAA cooperated with the Army Air Forces in developing refresher courses to qualify AAF mechanics for civilian "A & E" certificates. It also issued a series of "How To" leaflets on starting small airports and flying schools, obtaining pilot or mechanic certificates, and similar matters of interest to veterans.

The Future of Aviation—For guidance of an American interested in the future of aviation, the CAA prepared and published a book-length study on

(See Review, page 2)



New Test Method Of CAA Increases Safe Plane Output

Streamlined inspection procedures, designed to keep greatly increasing numbers of aircraft flying safely, have been put into effect at factories and airports by the Civil Aeronautics Administration.

The new procedures provide for appointment from the industry of designated manufacturing inspection representatives and designated aircraft maintenance inspectors, according to T. P. Wright, Administrator of Civil Aeronautics.

How the Plan Works—Owners of private or non-scheduled commercial aircraft will be able to comply with the requirements for annual inspection, and inspection after major repairs by going to any of the designated aircraft maintenance inspectors. The CAA expects to authorize at least 2,000 of these industry specialists.

This contrasts with only 124 aircraft inspectors employed by the CAA itself, a number too small to give prompt service to today's 30,000 civil aircraft, and obviously inadequate for the more than 100,000 planes expected by 1950.

New Procedure Established—In addition to the CAA's Safety Regulation staff, about 150 aircraft inspection representatives have been authorized by CAA to give annual inspections only. These authorizations will be withdrawn, and those qualified for the broader responsibilities of designated aircraft maintenance inspectors will be issued new certificates of authority.

The designated manufacturing inspection representatives will be employees of aircraft manufacturers holding CAA production certificates. They will be authorized by CAA to issue "NC" airworthiness certificates, which indicate that the plane coming off the production line complies with plans and specifications previously approved by CAA engineers. Every plane sold must carry an airworthiness certificate.

Inspection Load Increases—With only about 50 factory inspectors employed by the CAA, delegation of their authority is an essential step to prevent

(See Test Method, page 3)

514618

Punch Card Machines Aid Studies Of Flutter and Vibration in Planes

Studies by Civil Aeronautics Administration scientists of vibration and flutter characteristics of high speed airplanes have been materially aided by the use of punch card machines in quickly solving intricate mathematical equations.

These studies, conducted by the Aircraft Engineering Division's Flutter and Vibration unit, have been going on for more than 3 years. The results have been very beneficial to the military services and a number of contractors constructing military aircraft. The methods are now available to all in the aviation industry.

Heavy Planes Pose Problem—With the proposal of very large aircraft for both military and civil use, it has become apparent that simple calculations may not be sufficiently representative of the aircraft to be reasonably useful. For simple structures designed for low speeds, such calculations may be useful for checking the results of static tests, but become less significant as the size of the airplane increases.

In the case of simple structures designed for low speed, the flexibilities of the structure are generally treated in a simplified manner. For large high speed aircraft, it has become increasingly apparent that the structure must be given a complete mathematical representation as a flexible body before the results from the calculations are at all significant.

Better Method Needed—As the mathematical representation of the aircraft becomes more complicated, the method of solution becomes more and more involved to the point where conventional means will no longer handle the problem. For this reason, the CAA has set out to develop a better means for solving complicated problems that arise in determining the flutter and vibration characteristics of high speed aircraft.

The problem has been to find both the detailed mathematical representation of the aircraft, with its associated means for solving the complicated equations, and the experimental verification of these theoretical solutions.

In the case of involved flutter calculations, it is possible to verify the vibration characteristics of the airplane at zero airspeed by ground vibration tests before continuing to calculate the flutter speed. If a good correlation between experiment and theory exists at this point, it is then reasonable to place some faith in the actual flutter calculations at various airspeeds.

Where Punch Cards Come In—This sort of correlation has been accomplished by the use of punched card machine calculations of the airplane vibration modes solved by a new method of matrix iteration which CAA has assisted in developing. The matrix used is simply a systematic method of mathematically representing the airplane structure as a flexible body. The methods developed so far appear to be practical also for determining dynamic loads for large structures. These will aid in establishing suitable load factors and more accurately determine maximum possible loading conditions.

Most detailed studies of an airplane such as flutter, vibration, dynamic loads, and the like, are conducted experimentally after the aircraft has been completed. This means that if anything serious shows up during or before flight tests, the aircraft is greatly restricted and does not fulfill its original intent. Quite a number of military designs have been restricted, for various reasons, which greatly reduced their effectiveness because of inadequate means for determining the dynamic requirements early enough in the design stage.

The ultimate goal, of course, is to be able to determine the dynamic characteristics while the design is on the drawing board, without waiting to find the shortcomings of a design after it has been completed. In fact, with tremendously large designs proposed, it becomes very impractical to build test jigs and conduct ground tests before flight is undertaken, so some means of insurance becomes necessary to verify the airworthiness of the structure. If adequate calculations could be made, simple flight tests could be conducted at safe speeds to verify the structure under adverse conditions.

Better Machines in Prospect—Present calculating machines are not adequate to take care of the ultimate goal proposed, but new electronic calculating machines are being designed that should provide a rapid means for making computations. With such machines, it should become possible to evaluate design changes in the matter of hours or minutes, and therefore keep pace with detailed design and insure a satisfactory airplane before construction is ever undertaken.

Review

(Continued from first page)

aviation potential titled "Civil Aviation and the National Economy." This publication brings together the salient facts on aviation development to date, forecasts growth trends of the next 10 years, and sets forth a program of government and industry cooperation for achieving the projected increases.

Continued replenishment of the reservoir of aviation interest was assured as thousands of elementary and high schools established on a permanent peacetime basis the aviation courses and materials introduced during the war. CAA technical guidance was furnished through the state school systems, several of which set in motion "flight experience" programs, under which high school students receive about 4 hours of instruction in the air.

Commercial air traffic was fostered by the CAA in many ways. In its international phase, CAA technicians completed the testing of surplus military transports for use on overseas hops by civil airlines, and conducted numerous "proving runs" to assure safety on newly authorized transoceanic routes.

World Airway Facilities—Working through the Provisional International Civil Aviation Organization, the international aviation body at Montreal, and by direct conversations with representatives of foreign governments, progress was made toward establishing world-wide airways facilities of a uniformly high standard.

Plans were advanced for establishment during the current fiscal year of CAA offices in Stockholm, Madrid, and San Juan, P. R., and for expansion of existing offices at Lima and Rio de Janerio.

Technical advances by CAA aimed at expediting domestic and international airline operations included a new "approach control" system which permits landings every 3 minutes in "instrument weather"; agreement with the airlines to install direction-finding equipment at key airports for bad-weather landings this winter, pending completion of the very high frequency radio ranges and instrument (blind) landing systems perfected by CAA; and experimentation with military radar for civil use.

Threat to Operations—A threat to air carrier operations arose as the armed forces announced plans to withdraw support given CAA during the war to operate 105 airport traffic control towers. CAA is working to avert shutdown of those facilities by renewing its request for appropriations to staff airport traffic control towers as a regular part of its Federal Airways system.

Wright's Request For Control Tower Funds Supported By AMA

The request of T. P. Wright, Administrator of Civil Aeronautics, for Federal funds to continue maintenance of air traffic control towers at the present level is supported by a resolution adopted by the Chicago convention of the American Municipal Association.

Mr. Wright's appeal for funds was made when withdrawal of Army and Navy sponsorship of control tower operations became imminent.

Speaking in support of the resolution, Alfred MacDonald, director of Wichita's parks and airports, said termination of control tower service at many important airports in all sections of the country can result "in a dangerous and chaotic condition on these airports and on the airways."

Withdrawal of Federal control and operation and a reversion to the system of control in effect before the war would seriously retard national aviation progress and make flying, both commercial and private, at the Nation's greatest airports extremely hazardous, MacDonald told delegates to the national convention of city officials.

Mr. MacDonald stated that the system of control tower operation in effect before the war at many municipal airports was far from satisfactory. "For example," he declared, "the municipal airport with its municipal employes in the control tower would direct the take-off of an airplane from the airport, then the flight of the plane when it left the airport would come under Federal control on the airways."

Acting on Mr. MacDonald's recommendation, the delegates adopted a resolution which will be referred to the appropriate authorities, urging that the airport control towers be retained under CAA control. The resolution reads in part:

"Whereas, it is the opinion of the American Municipal Association that uniformity of control through a single agency on a nationwide basis of all aircraft operating on the established airways is essential to the safety and convenience and facility of all phases of air transportation, public or private, and

"Whereas, the withdrawal of such support will result in the burden of the cost of the operation of such control towers being transferred to municipalities which are unable to finance them which will result in the closing of many with grave consequences of hazard and chaos on the Nation's airways and airports unless funds are provided by Congress to meet the expense of such continued operation, . . .

"Be it resolved that the American Municipal Association does hereby endorse and urge the continuation of the Federal Program of airport control tower operation as heretofore staffed and as now conducted by the Federal Government and recommends to Congress the continuation and further expansion of this program."

Seeks Alaska Certificate

Application for a certificate for non-scheduled air transportation of passengers and property within a radius of 150 miles of Palmer, Alaska, has been filed with the Civil Aeronautics Board by Gillman Ambrose Lindsey. The application also seeks authorization for charter trips all over Alaska.

Pan Am Changes

John C. Leslie, recently elected vice president of Pan American Airways, will be succeeded as manager of the Atlantic Division by Robert L. Cummings, Jr.

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CAA In Readiness for Surplus Airport Plan; 700 Fields Involved

Airport field men of the Civil Aeronautics Administration have been alerted to prepare for a heavy new workload in connection with the disposition of some 700 war surplus airports.

The disposal program is aimed at encouraging the development of civil aviation and providing for the national defense.

While the Reconstruction Finance Corporation will be the actual disposal agency, the CAA will investigate and make recommendations on each property.

Will Classify for Civil Needs—The CAA report will indicate what portion of the property should be classified for airport use, in light of the civil aviation needs of the community and its ability to undertake maintenance obligations. In some cases, this will mean that only a part of a large military airport will be turned over to a local government. In others, the CAA may report that a field does not fit into its "National Airport Plan," and should be sold for non-aviation uses.

The CAA will recommend to whom a grant should be made. For example, says the Surplus Property Administration in a statement on CAA functions in the program, "a very large airport might be too great a responsibility for a city to assume but might be transferred to a state government to advantage. Or, in the case of an airport lying between several cities, some particular one might be named for good reasons."

Where airports have been leased by the government with an agreement to restore the premises before their return, the CAA will indicate the extent of restoration required.

Interim Permits—The CAA also will recommend issuance of interim permits for operation of airports pending final transfer of title.

Recommendations of the CAA will be reviewed by a Surplus Airport Disposal Committee composed of representatives of the Secretary of War, Secretary of Navy, the Administrator of Civil Aeronautics, the RFC, and the Surplus Property Administrator.

Airport disposal will be carried out under the terms of Surplus Property Administration Regulation 16, which includes a provision that Federal agencies shall be accorded first priority, and state and local governments second priority. Transfer to these agencies may be made without cash payment provided they accept specified conditions as to maintenance or other matters. Other sales shall be made at fair value, which is described as "the maximum price which a well-informed buyer . . . would be warranted in paying if he were acquiring the property for long-term investment."

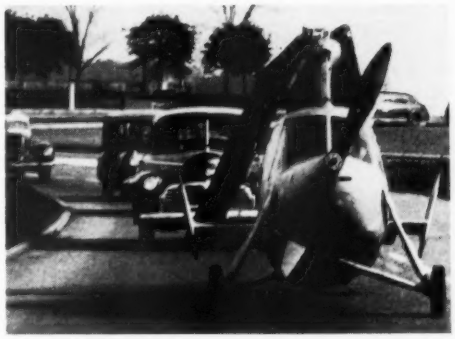
The regulation also states that any agency acquiring a surplus airport may transfer it again only with the approval of the CAA.

The procedure for surplus airport disposal was prepared with the assistance of George Borsari, lent by the CAA Office of Airports to SPA for the purpose.

All-Cargo Airline Formed

An all-cargo airline set up to operate on a non-scheduled basis to any airport in the United States is announced by the Air Cargo Transport Corporation. The line operates a fleet of twin-engined transports of special design. The company will make deliveries on a time schedule set forth in an agreement between shipper and airline.

Becomes Museum Piece



The roadable autogiro, developed by the Pitcairn Autogiro Company 10 years ago, has taken its last trip. It will spend the rest of its existence in the Smithsonian Institution after final check-over by the CAA.

This particular model was developed in 1935 through the "Vidal Plan" to instigate the manufacture of an inexpensive, useful, family-type aircraft. It was originally flown to Washington by Jim Ray, famous rotor-wing test pilot, landed in the middle of the city and driven through the streets to the Department of Commerce building. Ten years later, there is no known aircraft which can duplicate this demonstration of utility.

Used for experimental test work by Ray at Southwest Airways at Phoenix, Ariz., for several years, the 'giro was recently shipped back to Washington at the request of the Smithsonian. It was uncrated, assembled, and driven through street traffic for a distance of more than 8 miles. At the controls was John H. Geisse, now head of CAA Personal Flying Development, who has long been an advocate of roadability of aircraft, and who drove and flew this plane 10 years ago.

Test Method

(Continued from first page)

bottlenecks in the big civilian aircraft production now under way. Plants covered with reasonable adequacy by a CAA inspector before the war are getting back into production at rates as much as six times the pre-war level. Entry of many new producers into the field also has put a heavy load on CAA personnel.

CAA factory inspectors will advise the designated representatives and spot-check their work to assure maintenance of safety standards, devoting more of their own time to inspection at smaller plants which have not obtained CAA production certificates. The CAA production certificate itself, which indicates that facilities, materials, and quality control methods are satisfactory, will be issued hereafter only upon submission of a detailed written report by the factory management showing how it meets CAA requirements. Present holders of production certificates also will be required to present such a report before any of their employes can be designated by the CAA as a manufacturing inspection representative.

Industry Approves—Aircraft manufacturers consulted about the new plan are enthusiastic. In many cases, their factories are working 7 days a week, with customers waiting to fly away the finished product. Having one or more designated representatives of CAA on their staff, it will be possible to complete the necessary paper work at any time of day or night, without waiting for a CAA inspector who may be busy at a plant miles away.

'Student Pilot Guide' Prepares Candidates For Private License

Means of understanding the more important regulations governing flight are afforded the student pilot by the "Student Pilot Guide", available from the Office of Aviation Information, Civil Aeronautics Administration.

In addition, the "Guide" points out safe practices which have resulted from long experience.

Privileges Outlined—The privileges of the student pilot, together with restrictions necessary for his safety and that of other pilots, are outlined.

"Safety in flight depends primarily upon the training, ability, and judgment of those who fly," the Guide declares. "For your own safety and the safety of others it is necessary that the student pilot observe certain restrictions until he has gained sufficient skill, experience, and knowledge to receive a private pilot certificate."

Must Demonstrate Efficiency—The student pilot certificate provides for the increasing of privileges as increased proficiency is demonstrated.

The Guide was prepared by the Examination Section of the Airmen Service, Office of Safety Regulation, CAA.

The following text appears under the heading "Privileges and Restrictions":

Solo—Before you fly solo you must have your certificate endorsed by a certificated flight instructor who considers you competent to exercise the privilege of solo flight. Your flights must then be confined to the immediate vicinity of your local airport until you have been approved for cross-country flight.

Cross-country—To obtain approval for cross-country flight you are required to:

1. Have at least 10 hours of solo flight time (time during which you are the only occupant of the aircraft while in flight).

2. Pass a written test on regulations governing air traffic and operation of aircraft (administered by your flight instructor).

3. Secure an endorsement on your pilot certificate from a certificated flight instructor who considers you competent to fly cross-country.

Passenger-carrying—You are not permitted to pilot an aircraft carrying any person except a private, commercial, or airline transport pilot.

Kind of Aircraft—You are not permitted to pilot in solo flight any aircraft except the type, class, and model which has been endorsed upon your certificate.

Recent Experience—If you do not pilot an aircraft within a 90-day period you must pass a flight-check with a certificated flight instructor before flying solo.

Log Book—You will need to maintain a pilot log book in order to verify your hours of solo flight before cross-country, and your hours of solo, dual, and cross-country flight required for a private pilot certificate.

The Guide is for free distribution either by personal request or by mail. Requests should be made to the Office of Aviation Information, Civil Aeronautics Administration, Washington 25, D. C. It will also be distributed by CAA field inspectors with whom candidates must register as applicants for student pilot certificates.

War Material Scrapped

About 28 million dollars worth of Super Fortress materials have been scrapped by a board representing Seattle labor, industry, and government. Most of the material involved is said to be metal which will be melted down and returned to alloy stocks.

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Four Million for National Airport Given Approval by House Committee

Construction of four new hangars, an addition to the terminal building and heating plant at the Washington National Airport, and acquisition of a right-of-way for a new overpass to route 1, have been approved by the Deficiency Committee of the House of Representatives.

The report recommended the appropriation of $3,900,000 for this construction, which is part of a $16,000,000 expansion program for the airport being considered by the Civil Aeronautics Administration.

Rents Will Amortize Cost—All space in the proposed hangars has been contracted for by the airlines and the cost for building these hangars will be amortized over a period of 40 years by rental on a square foot basis.

Hervey F. Law, Airport Administrator, indicated he soon will request approximately $3,000,000 for a general office building for the airlines. This building, which will contain approximately 250,000 square feet, will actually be rented in advance by various lines before the item is submitted to the Budget Bureau. Half of this proposed space has already been contracted for by the Pennsylvania Central Airlines.

Other Improvements Included—Still other improvements and enlargements of facilities at the airport are included in the proposed $16,000,000 construction plan of the CAA, of which the present program is a minor part.

The additional construction projects proposed by Administrator Law are:

An extension to the hangar cafeteria, with a second floor for recreation purposes.

A 150-car garage, to be located north and east of the underpass to the hangars.

A 150-room combination apartment and transient room hotel.

A complete shopping center.

An exhibition building and area where the newest developments in aircraft accessories, aircraft engines and complete small planes can be placed on exhibit.

An overpass to U. S. route 1, tying in with the airport road system at the west end of the airport. This overpass will go over the Mount Vernon highway, over the railroad tracks, and enter into U. S. route 1 by a cloverleaf at 26th street. This overpass is greatly needed at the airport to replace the inadequate service road now connecting with route 1.

The revenues of the Washington National Airport now are more than the maintenance and operating expenses, and with the completion of each of the projects mentioned above the revenues will be further increased.

Maj. Warlick Appointed CAA Regional Counsellor

Major John F. Warlick has been appointed Regional Counsellor for the Civil Aeronautics Administration by T. P. Wright, Administrator.

Major Warlick, recently discharged from the Air Rescue Division of the Army Air Forces, will act as liaison between A. S. Koch, Assistant Administrator for Field Operations, and the regional offices.

He was born in Pickens County, Ga., in 1906, and graduated from the University of Tennessee in 1928, following which he was associated with the Spartan Aircraft Co. for one year before joining the Aeronautics Branch of the Commerce Department as a Junior Aeronautical Engineer.

After serving in the field for this agency, which later became the CAA, Major Warlick in 1939 was appointed Technical Assistant to the Director of Safety Regulation, and in October, 1942, was granted leave to join the Army Air Forces.

Army and Navy Planes To Replace Old Craft

Replacement of Civil Aeronautics Administration obsolete planes with 231 surplus Army and Navy craft is announced by T. P. Wright, Administrator.

The planes were allocated by the airplane division of the Reconstruction Finance Corporation in lieu of a Congressional appropriation to purchase new equipment. Old CAA planes will be turned over to the RFC for liquidation as surplus property, or, if beyond repair, will be torn down for salvage.

The planes will be issued to increase the efficiency of field operations and to aid the training of CAA flight inspectors at the Standardization Center in Houston. Two C-54s, the military model of the DC-4, will go to the Standardization Center to familiarize inspectors with these four-engine transport planes now being used by U. S. airlines for overseas operations.

Seven DC-3s will also become the property of CAA. Three of these will be used for routine work and freighting in Alaska; two will go to the Standardization Center; one to the CAA experimental station at Indianapolis; and the other to Washington.

One hundred eight Vultee BT-13As will be used by inspectors and other field men for transportation between airports, testing, and other routine work. Approximately the same number of Beechcrafts, both bi-motored and single-engine, will be used in checking radio ranges, testing communications, and transporting officials wherever necessary on official business.

A few of the Army planes already have been delivered to the CAA. Others will be delivered as soon as available.

PCA Passenger Capacity To Be Tripled, Says Monro

The passenger carrying capacity of Pennsylvania-Central Airlines is to be tripled, C. Bedell Monro, president, has announced. The PCA present capacity is 2,500 passengers daily, but with the addition of the recently acquired fleet of four-engined planes it will be possible to handle 8,000, Mr. Monro said.

He told members of the Pittsburgh Advertising Club that PCA would have the first of its 56-passenger skygiants in service before the end of December and that the full fleet of these bigger and faster planes would be speeding passengers to their destinations at four-miles-a-minute before spring of 1946.

"The 56-passenger planes which are nearly ready for daily service will not only materially cut flying time between principal cities but the vastly increased capacity of these planes will substantially ease the mounting demand for airplane space," Mr. Monro declared.

Private Planes Get Landing Permit

Privately owned airplanes in non-commercial operations are now permitted to land at Pearls Airport in Grenada, and Virgie Airport in St. Lucia, British West Indies, if quarantine regulations are observed and a nominal landing fee is paid. Advance notice of intention to land should be given.

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CAA JOURNAL

Henry A. Wallace
Secretary of Commerce

Civil Aeronautics Administration
T. P. Wright, Administrator

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PREPARED BY AVIATION INFORMATION

CAA Answers

Q—What is the necessary runway length to accommodate the take-off of a C-54E—DC (DC-4 type) and the distance required for a landing flight of the same kind of a plane? C.T.

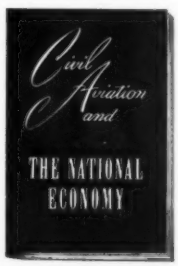
A—For the take-off, the runway length required to accommodate the flight path when the distance required to come to a stop after engine failure is equal to the distance necessary to climb to 50 feet after the same engine failure at take-off weight of 68,000 pounds on a level, hard-surfaced runway at sea level with no wind, is 5,100 feet. The distance required to land and come to a complete stop from a height of 50 feet at a landing weight of 58,200 pounds on a level, hard-surfaced runway at sea level with no wind is 4,520 feet. Note—The distance given is equal to the actual landing distance divided by an operating factor of 0.6.

Q—Are there figures available showing the value of property expected to be declared surplus by the Government? H.T.

A—W. Stuart Symington, Surplus Property Administrator, has announced the Government expects to declare surplus property valued at $32,258,000,000 during the fiscal year ending June 30, 1946. The Reconstruction Finance Corporation, with CAA advice, will dispose of airports valued at $1,625,000,000. The RFC will also dispose of aircraft.

Q—How long have gliders remained in the air continuously? W.S.

A—Lt. W. Cocke, Jr. remained aloft 21 hours and 34 minutes at Honolulu on December 17-18, 1931, in a Cocke "Nighthawk." Kurt Schmidt remained aloft 36 hours and 35 minutes at Korschenruh, Germany, on August 3-4, 1933, in a Gronau "D-Loerzer."



For sale (55 cents per copy) by Superintendent of Documents, GPO, Washington 25, D. C.

Global Air Routes Tested For Safety By "Proving" Flights

To assure safety in the establishment of world air routes, the Civil Aeronautics Administration is running many "proving" flights to foreign points, according to James L. Kinney, Chief of the Air Carrier Division.

Proving runs are now under way for the American Overseas Airlines from LaGuardia Field to London by way of Stevensville, or Gander Lake, Newfoundland; Santa Maria, one of the Azores Islands; and Lisbon.

No Delays Anticipated—American has been flying this run under contract to the Army Transport Command, and the CAA checking should encounter no delaying difficulties. In the near future, the same CAA men will be running tests on a route for Transcontinental and Western Airlines which parallels the American Overseas Route.

Other trans-oceanic routes already proved by CAA are the American Overseas and Pan American's parallel runs from LaGuardia Field or Boston to Poole or Hurn Airport, England, by way of Gander Lake, Newfoundland, and Shannon Airport, Eire; the Pan American routes from San Francisco to Honolulu; Seattle to Nome; Natal to Monrovia, and several through Central and South America.

Other Routes to Be Approved—Pan-American has other Pacific routes under construction which will require approval in the near future. One is from Honolulu to Manila and Hongkong, another from Honolulu to Auckland, New Zealand.

To facilitate proving runs, more than 20 veterans of the Air Transport Command and Naval Air Transport Service, many with years of previous airline experience, have been added to the CAA's staff of air carrier inspectors. With the anticipated establishment of many new overseas and continental routes, this staff of inspector technicians will be conducting proving runs for many months to come, according to Kinney.

After the airline operator has requested and received the approval of a new air route from the Civil Aeronautics Board; radio facilities have been installed and airports are ready for the contemplated operation, the CAA Air Carrier Division begins its investigation and conducts the necessary proving runs.

Why Routes Are Tested—Proving runs are flown over the route, and are carried out under simulated instrument conditions with CAA technicians on board. The purpose of a proving run over a new route, or extension to an existing route, is to determine the applicant's ability to conduct such an operation in compliance with the Civil Air Regulations and in accordance with minimum safety requirements of the Civil Aeronautics Administration.

Such determination is predicated upon the adequacy of facilities provided by the operator, including aircraft, airports, lighting, fueling, ground and aircraft radio facilities, and upon the competency of the pilot, dispatcher, maintenance, radio and other personnel.

The CAA inspectors are responsible for testing and approving new routes for scheduled air carriers. They are interested wholly in safety of operation and their inspections cover all phases of the proposed operation. Instrument landings are made at each terminal and radio facilities thoroughly checked along the line of flight. If there is any question about local conditions at any terminal, CAA airport engineers make a survey of terrain or obstructions which might endanger the lives of future passengers.

Many Facilities Checked—Other features of the new routes which are checked and approved by the CAA are the maintenance of radio facilities and aircraft repair shops. Spare parts must be kept at each terminal in sufficient quantities to ensure safe operation. Such shops must be manned by highly trained and efficient personnel. The airlines are completely aware of what is required by CAA, and inspector check-up is usually routine in nature.

The number of runs over each route varies according to the experience of the operator and the pilots. In some instances, pilots and airlines have been operating certain trans-oceanic runs for the Army. Only a routine check by the CAA inspectors is necessary for approval of such a route by the same airlines. In general, two or more proving runs are required before the first passenger flight is announced to the public.

Three CAA Heroes Honored

Three CAA heroes, Charles R. Marchant, Lorne E. Sasseen and Jack R. Bassett, were honored in absentia December 21, when T. P. Wright, Administrator of Civil Aeronautics, accepted in their behalf the British Empire medal, Civilian Division. The medals were presented by the Honorable L. B. Pearson, Canadian Ambassador Extraordinary and Plenipotentiary to the United States.

The resolution permitting these men to accept and wear this foreign decoration was passed by Congress and was signed by President Truman, December 12.

This honor was bestowed by the Government of Canada, in the name of King George VI, in recognition of their gallant services in rescuing four crew members from a crashed and burning Royal Canadian Air Force bomber in September, 1942.

For their heroism, Marchant, Sasseen and Bassett already have been awarded Carnegie Hero Medals and $500 each.

Marchant is now a CAA chief radio electrician and Sasseen is a senior general mechanic, both stationed at Ketchikan, Alaska. Bassett is no longer with the CAA.

26 Surplus Airplanes Sold In Philippines FLC Reports

Sale of more than half a million dollars worth of surplus aircraft is announced by Foreign Liquidation Commissioner Thomas B. McCabe at Manila, P. I.

The sales were as follows: seventeen C-47s to the government of the Netherlands East Indies for $340,000; five C-47s to the Philippine Air Lines for $100,000; and four C-47s to the Far Eastern Air Transport for $80,000.

FEAT is one of the two commercial airlines that operated in the Western Pacific before the Japanese invasion of the Philippines. During the war FEAT lost all of its equipment and the purchase of surplus Army property is enabling it to resume business. FEAT has been in operation since November 15, 1945, making two trips daily to Panay.

Philippine Air Lines, the other commercial line, expected to be flying regular runs by January 1.

Veteran Assumes PCA Legal Post

Pennsylvania-Central Airlines announces the appointment of Stuart T. McAlister, a former Kansas attorney, as legal assistant to the vice-president of PCA. McAlister, a veteran of 3 years in the Naval Air Transport Service, and a co-pilot of Admiral King's flag plane, was also first officer aboard planes which flew ranking Navy officials to the Yalta and Potsdam conferences.

Flight Tests Waived By New CAB Ruling

Privileges have been extended in obtaining private and commercial pilot certificates, formerly available only to members of the U. S. Armed Forces, to include civilian employes of U. S. ferrying or transport services (ATC, NATS); members of the Armed Forces of an ally (RAF, RCAF, etc.); or civilian employes of the transport or ferrying services of an ally (RAFTC, RCAFTC, etc.), the CAB announces.

Pilots possessing such experience now may obtain a civilian license without taking a flight test which was necessary until the new amendment became effective on December 1, 1945.

Under the amended regulation (20.560), any pilot may obtain a private or commercial license by passing a written examination on Parts 43 (General Operation Rules), and 60 (Air Traffic Rules), and presenting "Reliable documentary evidence" showing:

(a) that he is a member of the armed forces of the United States or a *civilian employe of the ferrying* or transport services of such forces, or

(b) that he is a United States citizen and is either a member of the armed forces of an ally of the United States or a civilian in the ferrying or transport services of such forces, or

(c) that he has been honorably discharged or released from the status specified in (a) or (b) above within the 12 calendar months preceding application, and

(d) that he has served in such organization on solo flying status as a rated pilot or the equivalent for at least six consecutive *months after December 8, 1941*, together with a record of his pilot time, will be deemed to have met the aeronautical knowledge, experience, and skill requirements of the Civil Air Regulations for the issuance of a pilot certificate with private or commercial ratings appropriate to his service experience.

New England Air Routes Are Consolidated by CAB

A consolidation of routes 27, 65 and 70 of Northeast Airlines has been authorized by the Civil Aeronautics Board. It will be known as route 27, and does not include Canadian operations. These have been separated from the domestic operations and will be designated as 27-F.

The Board decision places Northeast in a position to provide service from Portland, Bangor, Augusta, and points on its route north of Boston directly to New York without the necessity of a stop at Boston on all flights. It will also give Hyannis and the other points on the "Mayflower" route direct service to New York, bypassing Boston.

The Board stated that there is a substantial movement of traffic between New York and points north of Boston which will benefit by direct service. At present this type of service cannot be given because the authorizations are contained in two separate certificates, necessitating stops at Boston, the terminal point of the two routes, on all flights. The more direct service between Provincetown, Hyannis, Oak Bluffs, and Nantucket and New York, where approximately 40 percent of the traffic to the Cape cities originates, will according to the Board, make possible a more efficient utilization of equipment over the entire route.

The Board deferred action on Northeast's request for direct service between certain segments of the route until completion of the New England case, now pending before the Board and involving service to and from these areas.

Domestic Air Carrier Statistics

Operations for November 1945

Prepared from official reports, submitted by the carriers listed to the Civil Aeronautics Board

Operator and routes	Revenue miles flown	Revenue passengers carried [1]	Revenue passenger miles flown	Express carried (tons)	Express ton-miles flown	Passenger seat-miles flown	Revenue passenger load factor (percent)
All American Aviation, Inc., Pittsburgh-Huntington, Jamestown, Williamsport, Harrisburg, Washington—**Total**	**133,030**	—	—	**3.4**	**484**	—	—
American Airlines, Inc.—Total	**4,394,472**	**127,252**	**76,823,996**	**691.0**	**386,328**	**85,316,962**	**90.05**
Dallas-Los Angeles	1,506,729	28,484	27,269,602	83.0	83,238	29,477,796	92.51
New York-Chicago	638,521	28,248	10,857,426	203.0	92,446	12,456,940	87.16
Boston-New York	288,737	30,010	5,336,995	92.0	15,760	6,078,807	87.80
Cleveland-Nashville	92,420	6,479	1,712,961	31.0	6,964	1,911,770	89.60
New York-Ft. Worth	1,214,771	33,419	20,115,020	173.0	128,319	22,286,061	90.26
Washington-Chicago	155,384	6,851	2,728,107	38.0	15,440	3,084,449	88.45
Chicago-Ft. Worth	302,895	11,224	5,563,981	35.0	18,327	6,233,507	89.26
Buffalo-Toronto	11,172	1,752	126,087	2.0	133	234,522	53.76
El Paso or Ft. Worth-Mexico City	183,843	3,703	3,113,817	34.0	25,701	3,553,110	87.64
Braniff Airways, Inc.—Total	**818,734**	**36,018**	**14,892,589**	**101.1**	**35,145**	**16,763,195**	**88.84**
Chicago-Dallas	396,977	14,995	7,394,324	38.0	20,085	7,589,594	97.43
Denver-Brownsville; Amarillo-Oklahoma City	388,401	19,556	6,861,332	51.9	13,419	8,452,794	81.17
Houston-Nuevo Laredo	33,356	5,180	636,933	11.2	1,641	720,807	88.36
Chicago & Southern Air Lines, Inc.—Total	**527,439**	**20,977**	**8,819,198**	**70.9**	**27,373**	**11,000,574**	**80.17**
Chicago-New Orleans	263,870	12,238	4,735,048	38.8	16,065	5,498,049	86.12
Memphis-Houston	263,569	11,154	4,084,150	32.1	11,308	5,502,525	74.22
Continental Air Lines, Inc.—Total	**397,695**	**13,156**	**5,349,250**	**11.0**	**3,773**	**7,466,635**	**71.64**
Denver-El Paso-San Antonio	212,299	7,932	2,891,076	7.0	2,609	3,592,473	80.48
Pueblo-Tulsa	56,563	3,064	752,715	2.0	318	1,187,823	63.37
Denver-Kansas City	128,833	3,814	1,705,459	2.0	846	2,686,339	63.49
Delta Air Corporation—Total	**552,743**	**26,113**	**9,315,708**	**47.0**	**16,483**	**11,562,134**	**80.57**
Charleston or Savannah-Ft. Worth	490,285	22,588	8,179,984	31.0	11,572	10,240,854	79.88
Atlanta-Cincinnati	62,458	3,735	1,135,724	16.0	4,911	1,321,280	85.96
Eastern Air Lines, Inc.—Total							
Boston-San Antonio or Brownsville							
Boston-Miami							
Chicago-Jacksonville							
Atlanta-Miami							
Washington-St. Louis							
Essair, Inc., Houston-Amarillo—**Total**	**73,888**	**1,194**	**359,293**	**1.0**	**283**	**664,992**	**54.03**
Inland Air Lines, Inc.—Total	**148,710**	**5,549**	**1,491,865**	**3.6**	**867**	**2,080,814**	**71.70**
Denver-Great Falls	115,144	4,551	1,222,445	3.0	743	1,729,231	70.69
Cheyenne-Huron	33,566	998	269,420	.6	124	351,583	76.63
Mid-Continent Airlines, Inc.—Total	**369,696**	**17,144**	**5,307,656**	**21.9**	**7,260**	**6,606,075**	**80.35**
Minneapolis-Tulsa	235,485	11,640	3,763,091	16.2	5,237	4,729,806	79.56
Minneapolis-Des Moines, St. Louis or Kansas City	134,211	5,504	1,544,565	5.7	2,023	1,876,269	82.32
National Airlines, Inc.—Total	**377,006**	**9,217**	**4,502,982**	**13.2**	**4,948**	**5,129,390**	**87.79**
New York-Key West via Miami	250,435	6,092	2,915,263	6.3	2,105	3,377,164	86.32
Jacksonville-New Orleans	126,571	4,043	1,587,719	6.9	2,843	1,752,226	90.61
Northeast Airlines, Inc.—Total	**222,790**	**18,955**	**4,059,895**	**15.6**	**2,771**	**5,115,612**	**79.36**
Boston-Montreal or Presque Isle and Moncton	84,124	5,843	1,349,051	4.1	550	1,933,536	69.77
Boston-New York	138,666	13,112	2,710,844	11.5	2,221	3,182,076	85.19
Northwest Airlines, Inc.—Total	**1,205,486**	**31,693**	**20,184,365**	**86.5**	**52,438**	**23,511,046**	**85.85**
Chicago-Twin Cities-Seattle; Fargo-Winnipeg	914,747	29,516	15,364,817	63.6	35,072	18,078,533	84.99
Minneapolis-Duluth	11,520	854	122,976	.9	127	236,880	51.91
Minneapolis-New York	279,219	6,595	4,696,572	22.0	17,239	5,195,633	90.39
Pennsylvania-Central Airlines Corp.—Total	**1,111,898**	**68,366**	**18,847,227**	**240.0**	**59,192**	**23,230,696**	**81.13**
Norfolk-Detroit	558,769	42,477	9,458,091	119.0	25,200	11,679,620	80.98
Detroit-Milwaukee or Chicago	268,220	21,897	4,614,721	72.0	16,740	5,631,082	81.95
Washington-Buffalo	30,932	1,894	523,299	5.0	1,251	648,376	80.71
Pittsburgh-Buffalo	17,440	1,383	279,728	4.0	615	365,172	76.60
New York-Birmingham	219,212	9,067	3,728,462	38.0	15,001	4,543,999	82.05
Norfolk-Knoxville	17,325	909	242,926	2.0	385	362,447	67.02
Transcontinental & Western Air, Inc.—Total	**2,918,180**	**51,517**	**45,216,638**	**502.0**	**294,348**	**51,906,116**	**87.11**
New York-Los Angeles	1,838,458	38,578	28,900,708	273.0	199,815	32,367,324	89.29
Dayton-Chicago	44,148	3,046	736,032	15.0	3,443	875,166	84.10
Winslow-San Francisco	240,955	9,349	3,671,435	26.0	10,413	4,514,597	81.32
Kansas City-Pittsburgh via Chicago	491,915	12,346	7,336,313	124.0	71,226	8,122,273	90.32
St. Louis-Detroit via Cincinnati and Dayton	150,911	8,005	2,341,589	45.0	10,614	2,949,893	79.38
Washington-Dayton via Columbus	94,652	4,061	1,354,256	13.0	4,572	1,899,672	71.29
Pittsburgh-Boston	57,141	1,992	876,305	6.0	3,265	1,177,191	74.44
United Air Lines, Inc.—Total	**3,770,127**	**81,324**	**53,903,098**	**375.1**	**387,717**	**62,951,400**	**85.63**
New York-San Francisco	2,825,566	43,266	36,756,517	270.2	325,931	43,832,749	83.86
Salt Lake City-Seattle	228,360	8,888	3,791,820	10.7	18,194	4,546,813	83.40
Seattle-San Diego	567,862	28,721	10,793,218	73.0	33,751	11,398,751	93.06
Seattle-Vancouver	14,102	2,112	268,902	9.9	1,268	301,040	89.32
Washington-Toledo	61,474	2,891	1,149,069	3.2	2,390	1,269,070	90.54
Cleveland-Boston	61,553	2,115	1,045,437	6.9	6,056	1,168,707	89.45
Denver-Cheyenne	11,210	1,033	98,135	1.2	127	234,270	41.89
Western Air Lines, Inc.—Total	**527,433**	**23,639**	**9,394,277**	**47.6**	**18,658**	**10,989,554**	**85.48**
San Diego-Salt Lake City	291,759	11,703	5,005,747	29.3	13,156	6,113,123	81.89
Salt Lake City-Great Falls	57,958	2,867	924,017	3.5	687	1,202,382	76.85
Great Falls-Lethbridge	9,462	601	83,370	.6	78	189,945	43.89
Los Angeles-San Francisco	168,254	9,522	3,381,143	14.2	4,737	3,484,104	97.04
Total							
Caribbean Atlantic Airlines, Inc., San Juan-Mayaguez and Christiansted—**Total**	**34,814**	**4,201**	**231,982**	**7.5**	**607**	**607,482**	**38.19**
Colonial Airlines, Inc., New York-Montreal—**Total**	**147,860**	**8,374**	**2,668,320**	**8.7**	**2,447**	**3,100,929**	**86.05**
Hawaiian Airlines, Ltd., Honolulu-Hilo and Port Allen—**Total**	**114,581**	**15,123**	**2,126,871**	**268.4**	**41,374**	**2,312,088**	**91.99**
Grand Total							

[1] The total passengers carried for each airline is an unduplicated figure.

Domestic Air Carrier Statistics—Continued

Operations for First 11 Months of 1945 as Compared with Same Period of 1944

Operator	Revenue miles flown January-November		Revenue passengers carried (unduplicated) January-November		Revenue passenger miles flown January-November	
	1945	1944	1945	1944	1945	1944
All American Aviation, Inc.	1,364,595	1,121,105	0	0	0	0
American Airlines, Inc.	43,569,857	31,278,397	1,182,031	847,969	728,021,595	519,787,616
Braniff Airways, Inc.	7,443,120	4,849,651	312,636	203,243	133,531,623	85,712,817
Chicago & Southern Air Lines, Inc.	4,807,176	2,616,704	179,232	96,095	79,353,797	45,242,417
Continental Air Lines, Inc.	3,522,742	2,139,004	111,951	60,876	46,769,163	21,501,193
Delta Air Corporation	5,377,134	3,156,358	249,840	149,735	94,523,532	59,676,551
Eastern Air Lines, Inc.		15,550,873		436,791		242,017,883
Essair, Inc.	255,710		3,491		1,060,088	
Inland Air Lines, Inc.	1,596,998	1,098,259	54,187	20,576	16,950,324	5,533,183
Mid-Continent Airlines, Inc.	3,023,280	2,053,133	138,683	68,295	39,865,515	19,607,963
National Airlines, Inc.	5,350,659	3,011,142	129,913	103,258	64,670,146	36,186,345
Northeast Airlines, Inc.	2,048,238	917,000	157,692	48,493	35,000,154	11,702,284
Northwest Airlines, Inc.	11,245,732	6,645,492	301,785	164,919	198,210,062	108,783,282
Pennsylvania-Central Airlines Corp.	10,277,062	4,784,643	674,449	377,225	174,804,438	82,505,105
Transcontinental & Western Air, Inc.	29,276,832	19,697,952	515,112	363,762	473,999,280	320,005,814
United Air Lines, Inc.	36,449,742	26,855,862	702,961	462,220	548,564,120	417,531,557
Western Airlines, Inc.	4,964,034	2,807,220	209,124	108,344	89,241,229	50,736,423
Total		28,582,795		3,511,801		2,027,530,443
Index (1944 = 100)		100.00		100.00		100.00
Caribbean Atlantic Airlines, Inc.	266,645	194,307	30,557	17,875	1,842,252	1,241,684
Colonial Airlines, Inc.	1,570,484	946,162	85,510	51,260	26,846,159	15,894,016
Hawaiian Airlines, Ltd.	1,086,818	863,091	143,396	100,209	20,469,849	14,402,308
Grand Total		130,586,355		3,681,145		2,059,068,451
Index (1944 = 100)		100.00		100.00		100.00

Operator	Express carried (tons) January-November		Express ton-miles flown January-November		Passenger seat-miles flown January-November		Revenue passenger load factor (percent) January-November	
	1945	1944	1945	1944	1945	1944	1945	1944
All American Aviation, Inc.	66.5	67.0	10,342	10,200	0	0	—	—
American Airlines, Inc.	12,430.5	10,329.7	6,412,270	4,810,223	806,517,458	576,590,191	90.27	90.15
Braniff Airways, Inc.	998.1	604.1	456,555	281,999	149,224,691	94,806,002	89.48	90.41
Chicago & Southern Air Lines, Inc.	802.8	495.7	338,891	208,246	99,786,364	54,132,789	79.52	83.58
Continental Air Lines, Inc.	188.5	91.4	85,698	36,898	59,661,066	24,331,303	78.39	88.37
Delta Air Corporation	599.2	426.7	220,002	156,410	111,894,134	65,513,432	84.48	91.09
Eastern Air Lines, Inc.		2,591.3		1,543,340		279,144,494		86.70
Essair, Inc.	2.4	—	673	—	2,004,426	—	52.89	—
Inland Air Lines, Inc.	47.9	23.8	11,362	4,873	23,402,839	9,266,001	72.43	70.51
Mid-Continent Airlines, Inc.	193.2	114.1	58,563	31,302	52,577,321	25,228,857	75.82	77.72
National Airlines, Inc.	229.1	182.4	118,186	63,063	72,066,046	41,310,331	89.74	87.60
Northeast Airlines, Inc.	187.1	60.4	35,551	11,948	46,718,989	19,266,692	74.92	60.74
Northwest Airlines, Inc.	1,338.4	1,031.9	778,726	555,412	223,501,230	127,757,208	88.68	85.15
Pennsylvania-Central Airlines Corp.	3,578.6	2,241.9	822,036	426,548	212,362,574	99,440,091	82.31	82.97
Transcontinental & Western Air, Inc.	7,845.6	6,131.8	4,176,187	3,213,640	524,826,738	347,784,453	90.32	92.01
United Air Lines, Inc.	5,517.5	4,984.9	4,592,005	3,859,362	582,413,873	434,371,819	94.19	96.12
Western Air Lines, Inc.	629.2	404.5	272,684	197,522	101,685,386	57,180,057	87.76	88.72
Total		29,781.6		15,410,986		2,256,122,720		89.87
Index (1944 = 100)		100.00		100.00		100.00		100.00
Caribbean Atlantic Airlines, Inc.	121.5	92.5	9,802	7,228	3,714,853	1,726,029	49.59	71.94
Colonial Airlines, Inc.	103.2	117.6	30,598	36,523	32,924,175	19,727,006	81.54	80.57
Hawaiian Airlines, Ltd.	2,973.2	3,281.9	451,989	506,294	21,817,968	15,323,928	93.82	93.98
Grand Total		33,273.6		15,961,031		2,292,899,683		89.80
Index (1944 = 100)		100.00		100.00		100.00		100.00

	January	February	March	April	May	June	July	August	September	October	November	Total
Passengers carried (unduplicated) total revenue and non-revenue:[1]												
17 domestic airlines	363,276	341,980	452,744	458,924	520,257	557,622	599,741	642,595	614,765	655,128		
Total airlines	379,954	357,125	470,654	476,644	537,564	583,968	630,730	677,577	642,961	683,931		
Passenger miles flown (total revenue and non-revenue):												
17 domestic airlines	209,288,931	190,324,414	251,170,561	256,892,372	289,846,496	306,872,654	331,639,158	343,928,310	329,276,363	353,526,547		
Total airlines	212,308,947	193,041,242	254,553,089	260,301,209	293,224,437	311,752,948	337,427,431	350,535,182	334,774,727	359,199,060		

[1] Preliminary. Due to the delay in reporting by some companies, these figures are subject to revision in subsequent publications.

Students at Brooklyn College Study Airport Terminal Needs

Evidence that college students are developing interest in economic phases of air transportation is provided by activities at Brooklyn College to determine the need for a central terminal in downtown Brooklyn.

The survey is being made in cooperation with the *Brooklyn Eagle* by the Bureau of Economic Research, a student organization composed of those who are majoring in economics at Brooklyn College.

The students are aided in the survey by Dr. W. H. Steiner, Chairman of the Department of Economics, and Dr. Otto H. Ehrlich. Some members of the Bureau are assembling economic data concerning Brooklyn relevant to the survey. Main emphasis, however, is being placed on a mail campaign in which 25,000 questionnaires will be distributed to a representative "sample" of the city's population. The mail campaign will be supplemented by personal interviews with civic and business leaders.

Specifically, the survey is planned to determine the need and desirability of a terminal which would provide bus communication to LaGuardia and Idlewild airports, to all railroad stations in the Greater New York area, including Hoboken and Jersey City, and to the docks of all steamship companies in New York harbor.

Domestic Lines' Earnings Rise

The Civil Aeronautics Board announces the net operating revenue for the first 8 months of this year for the 19 domestic air carriers, including All American Aviation, Inc., Caribbean Atlantic Airlines and Hawaiian Airlines, reached a total of $31,099,611, which is an increase of $7,981,714 over the same period for last year. For the year ending August 31, 1945, the net operating revenue for all domestic airlines was $44,541,273 as compared with $29,339,234 for the previous year. Express and freight revenues showed an increase from $7,640,911 for the year to $11,016,748.

Airline Orders

Service

No. 4208 permits Eastern Air Lines to inaugurate non-stop service immediately between Charlotte, N. C., and Jacksonville, Fla., on route 6. (Nov. 21)

No. 4209 permits National Airlines to serve Philadelphia, Pa., beginning December 1, 1945, through the use of the Southwest (Municipal) Airport. (Nov. 23)

No. 4210 denies application of Essair, Inc., for a temporary exemption from certain terms contained in its certificate for route 64. (Nov. 26)

No. 4211 dismisses, upon the request of Richard W. Putnam and I. V. Bartleymay, their application for a certificate. (Nov. 26)

No. 4212 grants the City of Alpena, Mich., leave to intervene in the Great Lakes Area Case proceeding—Docket 535 et al. (Nov. 26)

No. 4214 grants the City of Concord, N. H., leave to intervene in the New England Case proceeding—Docket 399 et al—but denies their motion to incorporate evidence into the record of said proceeding. (Nov. 26)

No. 4216 grants the City of Sioux City, Iowa, leave to intervene in the Great Lakes Area Case proceeding. (Nov. 26)

No. 4217 grants the City of Laconia, N. H., leave to intervene in the New England Case proceeding. (Nov. 26)

No. 4218 permits Yukon Southern Air Transport Limited to serve Fairbanks, Alaska, immediately, through the use of Weeks Field. (Nov. 26)

No. 4219 institutes a proceeding for fixing rates of compensation for mail transportation, from and after Nov. 16, 1945, by Pan American Airways over its routes between San Francisco, Calif., and Auckland, New Zealand, and between San Francisco and Hong Kong and Singapore. (Nov. 26)

No. 4220 grants American Export Airlines leave to intervene in the application of Danish Air Lines (D.D.L.) for a foreign air carrier permit to operate between Copenhagen, Denmark and the U. S. (Nov. 26)

No. 4221 denies requests of United Airlines and Braniff Airways that their applications be consolidated into the proceeding concerning the application of American Airlines for approval of control of Mid-Continent Airlines by American—Docket 2068. (Nov. 26)

No. 4222 permits Braniff, Chicago and Southern, Delta Air, TWA, United, Air Line Pilots Assn., and United Automobile-Aircraft-Agricultural Implement Workers of America to intervene in Docket 2068. (Nov. 26)

Nos. 4223, 4224 and 4225, permit TWA, United Air Lines and All American Aviation, respectively, to serve Philadelphia, Pa., beginning December 1, 1945, through the use of the Southwest (Municipal) Airport. (Nov. 27 and 28)

No. 4226 grants Delta Air Corp., permission to serve Spartanburg, S. C., beginning December 1, 1945, through the use of Greenville, Municipal Airport and Spartanburg Memorial Airport. (Nov. 29)

No. 4227 denies application of All American Aviation for an exemption from the provisions of sec. 401(a) of the Civil Aeronautics Act. (Nov. 29)

No. 4228 denies petition of Woodley Airways for permission to intervene in the application of Martin Air Service for a permanent and/or temporary certificate, or exemption therefrom, for charter and contract air transportation of persons and property in Alaska. (Nov. 30)

No. 4229 grants petition of Woodley Airways for permission to intervene in the application of Northern Airways, for a permanent and/or temporary certificate. (Nov. 30)

No. 4230 grants petition of Woodley Airways for permission to intervene in the application of Northern Airways for a temporary certificate authorizing transportation of persons and property in non-scheduled service, or charter service, within the Territory of Alaska. (Nov. 30)

No. 4231 grants petition of Woodley Airways for permission to intervene in the application of Circle Air Trails for a certificate. (Nov. 30)

No. 4232 grants petition of Woodley Airways for permission to intervene in the application of Lavery Airways, for a permanent certificate authorizing transportation of persons, property and mail within the Territory of Alaska, in non-scheduled or charter service with terminal points at Fairbanks, Anchorage and Paxson's Lake, Alaska. (Nov. 30)

No. 4233 grants petition of Woodley Airways for leave to intervene in the application of Phillip Dwight Thorpe for a permanent or temporary certificate. (Nov. 30)

No. 4234 grants petition of Woodley Airways for permission to intervene in the application of Grenold Collins for a certificate. (Nov. 30)

No. 4235 grants petition of Woodley Airways for permission to intervene in the application of Merle W. Smith for a permanent or temporary certificate. (Nov. 30)

No. 4236 grants petition of Woodley Airways for permission to intervene in the application of Robert C. Reeve, an individual doing business as Reeve Airways for a certificate or an exemption order. (Nov. 30)

No. 4237 grants petition of Woodley Airways for permission to intervene in the application of Toivo A. Aho and Dallas L. Bowen, a partnership doing business as Aho Flying Service, for a certificate. (Nov. 30)

No. 4238 permits Northwest Airlines to inaugurate non-stop services on or about December 1, 1945, between Minneapolis-St. Paul, Minn., and Spokane, Wash., and between Minneapolis-St. Paul, and Seattle, and between Seattle, and Billings, Mont., on route 3. (Nov. 30)

No. 4239 permits National Airlines to serve Wilmington, N. C., on or about December 10, 1945, through the use of Bluethenthal Army Air Field. (Nov. 30)

No. 4240 amends United Air Lines certificate for route 1 so as to include Ogden, Utah, as an intermediate point between the intermediate points Rock Springs, Wyo., and Salt Lake City, Utah; orders that decision be deferred as to the remainder of UAL's application—Docket 1379—until such time as the West Coast Case—Docket 250 et al.—is decided. (Issued with an opinion—Nov. 29)

No. 4241 grants the petitions of the City of Evansville and the Louisville and Jefferson County Air Board for permission to intervene in the applications of Transcontinental and Western Air, for certificates—Docket 221 et al.; denies petition of the Louisville Board of Trade to intervene in the same proceeding. (Nov. 30)

No. 4242 temporarily exempts Pan American, from December 1, 1945, to March 31, 1946, from the conditions of its certificate insofar as they would prevent Pan Am from (a) engaging in foreign air transportation between New York, N. Y., and Lisbon, Portugal via Gander Airport, Newfoundland and Shannon Airport, Eire, and (b) temporarily suspending service at Horta the Azores. (Nov. 30)

No. 4255 dismisses, upon the request of Expreso Aereo Inter-Americano, S. A., their application for amendment of their temporary foreign air carrier permit to permit the transportation of mail from the Republic of Cuba to the U. S. (Nov. 30)

No. 4257 grants Braniff Airways leave to intervene in the application of American Airlines for amendments of certificates. (Nov. 30)

No. 4258 consolidates applications of Royal Dutch Air Lines for foreign air carrier permits proposing transatlantic service between Amsterdam, Holland and New York, N. Y., and between Willemstad, Curacao, Netherlands W. I., and Miami, Fla. (Nov. 30)

No. 4261 permits Pan American to serve Lisbon, Portugal, on or about December 4, 1945, through the use of Portela de Sacavin Airport. (Nov. 30)

No. 4262 permits Chicago and Southern leave to intervene in American Airlines' application (Docket 932 et al) for amendments of certificates. (Nov. 30)

No. 4267 temporarily exempts Northern Airways from the provisions of Title IV of the Act insofar as they would prevent Northern from temporarily performing service which Gillam Air Lines is authorized to perform; temporarily exempts Gillam Air Lines from the provisions of Title IV insofar as they would require it to render service under the terms of its certificate. (Nov. 30)

No. 4276 denies motion of Eastern Airlines to vacate supplemental consolidation order No. 4163. (Dec. 4)

No. 4278 grants the City of Washington, Pa., leave to intervene in the Great Lakes Area Case—Docket 535 et al. (Dec. 5)

No. 4280 orders that the temporary certificate issued to American Export Airlines pursuant to Board orders Nos. 581 and 1517, are cancelled of record as of the date a copy of this order (No. 4280) is served upon American Overseas Airlines, Inc., formerly American Export Airlines. (Dec. 5)

No. 4281 consolidates for hearing several applications for certificates in the proceeding known as the Middle Atlantic Area Case—Docket 674 et al. (Dec. 6)

No. 4282 grants the petitions of the Cities of Syracuse and Watertown, N. Y., Philadelphia and Johnstown, Pa., the counties of Allegheny and Lackawanna, Pa., for leave to intervene in the Middle Atlantic Area Case; denies petitions of the Baltimore (Md.) Assn. of Commerce and the C. of C. and Board of Trades of Philadelphia leave to intervene in the same proceeding. (Dec. 6)

No. 4291 denies the petition of the City of Springfield, Mo., for leave to intervene in the proceeding known as Cincinnati-New York—Additional Service—Docket 221 et al. (Dec. 7)

No. 4292 dismisses, upon the request of National Airlines, their application for exemption from the provisions of sec. 401(a) of the Act. (Dec. 7)

No. 4293 grants the petition of Woodley Airways for permission to intervene in the application of Top O' the World Flying Service for a certificate. (Dec. 7)

No. 4294 denies motion of Transcontinental and Western Air to dismiss the application of Pan American Airways for amendments of certificates—Docket 2076. (Dec. 10)

No. 4295 rescinds order No. 1793 which temporarily suspended service at the Newark Army Airfield by American, Eastern, TWA and United Air Lines. (Dec. 10)

No. 4296 permits Eastern Air Lines to inaugurate on December 10, 1945, non-stop service between Richmond, Va., and Charleston, S. C., on Route 6. (Dec. 10)

No. 4297 permits Pan American Airways to inaugurate on December 12, 1945, non-stop service between Camaguey, Cuba and Ciudad Trujillo, Dominican Republic on FAM-5. (Dec. 10)

No. 4298 permits Pan American to inaugurate on December 12, 1945, non-stop service between Port of Spain, Trinidad and Paramaribo, Surinam on FAM-5. (Dec. 10)

Miscellaneous

No. 4213 approves an agreement by and between All American Aviation and certain other carriers as members of the Air Traffic Conference of America relating to Air Traffic Conference Agency Resolution. (Nov. 26)

No. 4215 approves an agreement by and between Pennsylvania Central Airlines and American Airlines relating to porter service for PCA at Buffalo. (Nov. 26)

No. 4256 approves an agreement by and between Pennsylvania-Central Airlines Corp., and American Airlines relating to sublease of space in a radio transmitter site at Williamsville, N. Y. to PCA. (Nov. 30)

No. 4259 approves authorization by Reconstruction Finance Corp., re Alaska Coastal Airlines application for a loan. (Nov. 30)

No. 4260 approves an agreement by and between Pennsylvania-Central Airlines and American Airlines relating to air-conditioning of American's planes at Knoxville, Tenn. (Nov. 30)

No. 4279 orders that the certificate heretofore issued to American Export Airlines be reissued so as to reflect the change in corporate name to American Overseas Airlines, Inc., subject to certain provisions. (Dec. 5)

Airman Orders

Suspensions

No. 4243 suspends private certificate of Robert D. McCullough for 15 days because he flew in instrument weather contrary to the provisions of sec. 43.65 of the Civil Air Regulations. (Nov. 30)

No. 4244 suspends flight instructor rating of Alan R. Janes for 30 days because he permitted John Harrison Davis to pilot an aircraft when Davis was not the holder of a currently effective pilot certificate, contrary to the provisions of sec. 20.726 of the Civil Air Regulations. (Nov. 30)

No. 4245 suspends student certificate of James Lawrence Brown for 60 days because he flew outside the approved flight area of his instructor, contrary to the provisions of sec. 20.71 of the Regulations. (Nov. 30)

No. 4246 suspends commercial certificate of Stephen A. Hopkins for 30 days because he flew an aircraft which had not been given a periodic inspection by an appropriately rated mechanic and found to be airworthy and a notation to that effect entered by such mechanic in the aircraft log, contrary to the provisions of sec. 43.23 of the Regulations. (Nov. 30)

No. 4248 suspends student certificate of Robert G. Davidson for 6 months because he flew at less than 500 ft. above the ground and water, contrary to the provisions of sec. 60.3503 of the Regulations. (Nov. 30)

No. 4250 suspends student certificate of Lester C. Stolper for 6 months because he flew approximately 2 miles northwest of Racine, Wis., dove to an altitude of 25 feet, collided with wires and then crashed to the earth, contrary to the provisions of sec. 60.3503 of the Regulations. (Nov. 30)

No. 4254 suspends student certificate of Irvin M. Smith for 6 months because he operated a certificated aircraft when it was not maintained in condition for safe operation in that: (1) propeller was nicked beyond repair; (2) landing gear was damaged; and (3) struts on left side of plane were bent; contrary to the provisions of sec. 01.24 of the Regulations. (Nov. 30)

No. 4268 suspends student certificate of Charles H. Heisen for 6 months because he made several low-altitude flights in the vicinity of Lake Copneconic, Mich., attempted to gain altitude from about 15 ft. above the water without having attained sufficient speed, caused the plane to stall, attempted to recover, and crashed into the lake, contrary to the provisions of sec. 60.350 and 60.3503 of the Regulations. (Dec. 4)

No. 4269 suspends student certificate of Thomas D. Jones for 90 days because he flew over congested parts of the Cities of Kansas City, Kans., and Kansas City, Mo., at an altitude of less than 1000 feet, contrary to the provisions of sec. 60.350 of the Regulations. (Dec. 4)

No. 4270 suspends mechanic certificate of Roland A. Nippert for 30 days because he presented 2 aircraft for inspection and recommended them as airworthy when they were not. (Dec. 4)

No. 4272 suspends private certificate of Vernon L. Hubbard for 60 days because he flew in the vicinity of Cheyenne, Wyo., in instrument weather, when he did not hold a valid and currently effective instrument rating, contrary to the provisions of sec. 60.50(a) of the Regulations. (Dec. 4)

No. 4273 suspends commercial certificate and flight instructor rating of Merlin E. Garton for 60 days because he flew in a reckless and dangerous manner over the Nevada Airport, Nevada, Mo., at an altitude of less than 100 ft., contrary to the provisions of sec. 60.3503 of the Civil Air Regulations. (Dec. 4)

No. 4274 amends Board order No. 3827 to provide for the suspension of the private certificate of John C. Marshall for 90 days, Board order No. 3827 previously suspended Marshall's student certificate for the violation of sec. 20.720 of the Regulations. (Dec. 4)

No. 4275 suspends flight instructor rating of Jack Funk for 30 days because he permitted James Christie, the holder of a student certificate, to pilot an aircraft owned by Christie and to carry a passenger, contrary to the provisions of sec. 20.726 of the Regulations. (Dec. 4)

No. 4283 suspends student certificate of Weyman G. McDaniel for 6 months because he flew on a contact flight, departing from Charlottesville, Va., at approximately 6:30 p. m., flying within an airway traffic control area after sunset without filing a flight plan, and arriving at Washington, D. C., at 9:07, contrary to the provisions of sec. 60.471 of the Regulations. McDaniel also violated other provisions of the Regulations. (Dec. 7)

No. 4284 suspends private certificate of Joseph A. Block until April 27, 1946, because he flew as low as 150 ft. over Rochester, N. Y., contrary to the provisions of sec. 60.3500 of the Regulations. (Dec. 7)

No. 4286 suspends mechanic certificate of James M. Phillips for 6 months because he presented an aircraft to an inspector for the Administrator for inspection and approval and represented it as airworthy when it was not, in that (a) the left landing gear shock strut had a two-inch crack; (b) an improper type of swivel had been used on the fuel shut-off valve; (c) there was an opening in the firewall, contrary to the provisions of sec. 18.6 of the Regulations. (Dec. 7)

No. 4288 suspends student certificate of Raymond L. Connors until March 27, 1946, because he flew less than 500 ft. above the ground, contrary to the provisions of sec. 60.3503 of the Regulations. (Nov. 30)

No. 4289 suspends student certificate of Charles T. Huss, Jr., for 6 months because he flew over a congested area of White City Park, St. Petersburg, Fla., at an altitude of less than 1000 ft., contrary to the provisions of sec. 60.3500 of the Regulations. (Dec. 7)

No. 4299 suspends private certificate of Mohamed J. Shaik for 60 days because he started an engine without placing blocks in front of the wheels. His wife, who was not a licensed pilot, was at the controls. When the motor started she increased its speed and as a result the craft sped across the ground and crashed into another plane parked nearby. Both planes were extensively damaged. All of the foregoing is contrary to sec. 60.331 of the Regulations. (Dec. 11)

Revocations

No. 4247 revokes student certificate of Neil Hastings Cargile, Jr., because he carried a passenger who was not a certificated instructor, contrary to the provisions of sec. 20.720 of the Regulations. (Nov. 30)

No. 4249 revokes student certificate of Donivan W. George because he piloted an aircraft beyond a 150-mile radius of the operating base of his instructor, contrary to the provisions of sec. 20.71(b) and also carried a passenger who was not a certificated instructor. (Nov. 30)

No. 4251 revokes student certificate of Burton Rice, Jr., because he carried passengers who were not certificated instructors, contrary to the provisions of sec. 20.720 of the Regulations. (Nov. 30)

No. 4252 revokes student certificate of Elmer Humel because he flew in the vicinity of Washington Court House, Ohio, and carried a passenger, contrary to the provisions of sec. 43.50 of the Regulations. (Nov. 30)

No. 4253 revokes student certificate of Cornelius Rens because he flew at an altitude of less than 500 ft., contrary to the provisions of sec. 60.105(b) of the Regulations and carried a passenger, contrary to sec. 43.50. (Nov. 30)

No. 4263 revokes private certificate of Joel Eck because he piloted an aircraft in or near the vicinity of Augusta, Kans., in the furtherance of business, contrary to the provisions of sec. 43.50 of the Regulations. (Nov. 30)

No. 4264 revokes commercial certificate of Donald R. Williams because he altered and forged the certificate by typing on the face thereof the words, "Instructor—Flight" causing it to appear as a bonafide commercial certificate with a flight instructor rating. Williams also violated other provisions of the Regulations. (Nov. 30)

No. 4265 revokes student certificate of Sam Windman because he carried a passenger, contrary to the provisions of sec. 43.50 of the Regulations. (Nov. 30)

No. 4266 revokes private certificate of Jerry M. Cobb because he carried passengers for hire on a proposed trip from Los Angeles, Calif., to Cleveland, Ohio, contrary to the provisions of sec. 20.721 of the Regulations. Cobb also violated other provisions of the Regulations. (Nov. 30)

No. 4271 revokes student certificate of Paul M. Linn because he performed acrobatics at an altitude of less than 1,500 ft., and violated other provisions of the Regulations. (Dec. 4)

No. 4277 revokes commercial certificate of Robert C. Goff because he operated an aircraft in the vicinity of Gamble Airport, Hobart, Ind., while under the influence of intoxicating liquor, contrary to the provisions of sec. 60.345 of the Regulations. (Dec. 5)

No. 4285 revokes private certificate of John Lundquist. At the time Board order No. 3988 was issued revoking Lundquist's student certificate, the Administrator was unaware of the fact that Lundquist also held a private certificate. (Dec. 7)

No. 4287 revokes mechanic certificate of Donald W. Moyle because he made alterations on an engine which failed to comply with airworthiness requirements in that the engine was altered from 75 to 80 hp and that he failed to change (a) the baffling system in the engine; (b) the engine plate designation; and the octane rating placard, contrary to the provisions of sec. 18.6 of the Regulations. Moyle also violated other provisions of the Regulations. (Dec. 7)

No. 4290 revokes student certificate of Everett E. Rider because he carried a passenger, contrary to the provisions of sec. 20.720 of the Regulations. (Dec. 7)

Miscellaneous

No. 4300 orders that ....[1] afflicted with a congenital organic heart disease (a patent intraventricular septum) be issued a third class medical certificate. (Dec. 11)

No. 4301 denies petition of B. A. Johnson for a waiver of sec. 20.35(a) of the Regulations. Johnson requested the Board to waive that portion requiring applicants for a commercial certificate to have logged at least 200 hrs. of solo flying time. (Dec. 11)

No. 4302 orders that Patricia Seares Sullivan in applying for a private or commercial certificate shall not be required to meet the requirements of that portion of Special CAR 326 which requires that she shall have been a member of the WASP 6 calendar months preceding the date of her application. (Dec. 11)

Regulations

Amdt. 20–1 ..... *Effective Dec. 7, 1945*

§ 20.560 of the Civil Air Regulations is amended to read as follows:

20.560 Pilot certificate. An applicant who presents reliable documentary evidence showing:

(a) that he is a member of the armed forces of the United States or a civilian employee of the ferrying or transport services of such forces, or

(b) that he is a United States citizen and is either a member of the armed forces of an ally of the United States or a civilian in the ferrying or transport services of such forces, or

(c) that he has been honorably discharged or released from the status specified in (a) or (b) above within the 12 calendar months preceding application, and

(d) that he has served in such organizations on solo flying status as a rated pilot or the equivalent for at least six consecutive months after December 8, 1941, together with a record of his pilot time, will be deemed to have met the aeronautical knowledge, experience, and skill requirements of the Civil Air Regulations for the issuance of a pilot certificate with private or commercial ratings appropriate to his service experience, if he passes a written examination on Parts 43 and 60 of the Civil Air Regulations.

Reg. 352 ..... *Effective Nov. 16, 1945*

Noncompliance with the requirements of § 40.2611(b) of the Civil Air Regulations with respect to Delta Air Corporation operations between Chicago, Ill., and Miami, Fla.

Any first pilot listed in the Delta Air Corporation's current air carrier operating certificate on November 15, 1945, will be deemed to have met the requirements prescribed by § 40.2611 (b) of the Civil Air Regulations with respect to the piloting of aircraft in scheduled air transportation on the approved route between Chicago, Illinois and Charleston, South Carolina, via Anderson-Muncie-New Castle, Indiana; Cincinnati, Ohio; Knoxville, Tennessee; Asheville, North Carolina; Greenville and Spartanburg, South Carolina; Columbia, South Carolina; and the terminal point Charleston, South Carolina; also, between Chicago, Illinois and Miami, Florida, via Anderson-Muncie-New Castle, Indiana; Cincinnati, Ohio; Knoxville, Tennessee; Asheville, North Carolina; Greenville and Spartanburg, South Carolina; Augusta and Savannah, Georgia; Jacksonville, Florida, and the terminal point Miami, Florida, when he has completed 4 one-way trips over the route as first pilot without passengers or as second pilot with or without passengers and 2 one-way trips as an observer from the cockpit. During the 6 above specified trips he shall have made at least one landing at each terminal and scheduled intermediate stop.

This regulation shall terminate February 1, 1946.

[1] Note: It is Board policy to omit names in cases of physical disability.

AIR REGULATIONS . . . As of January 1, 1946

Title	Part No.	Price		Date Latest Edition		No. Amendments Issued	
		Part	Manual	Part	Manual	Part	Manual
Aircraft							
Airworthiness Certificates	01	$0.05	None	10/15/42	None	1[1]	.....
Type and Production Certificates	02	.05	$0.10	3/1/41	3/15/45	.....	.....
Airplane Airworthiness Transport Categories	04–0	Free	.45	11/1/45	7/1/44	[2]	1
Engine Airworthiness	13	.05	None	8/1/41	None	.....	.....
Propeller Airworthiness	14	.05	.15[7]	7/15/42	6/1/45	1	.....
Equipment Airworthiness	15	Free	None	4/15/44	7/1/38	.....	.....
Radio Equipment Airworthiness	16	.05	Free	2/13/41	2/13/41	.....	1
Maintenance, Repair, and Alteration of Aircraft, Engines, Propellers, Instruments	18	.05	.50	9/1/42	6/1/43	.....	.....
Airmen							
Pilot certificates	20	.05	None	7/1/45	None	1	.....
Airline Pilot Rating	21	.05	None	10/1/42	None	3	.....
Lighter-than-air Pilot Certificates	22	.05	None	10/15/42	None	1	.....
Mechanic Certificates	24	.05	None	7/1/43	None	1[3]	.....
Parachute Technician Certificates	25	.05	None	12/15/43	None	1	.....
Traffic Control Tower Operator Certificates	26	.05	None	2/1/44	None	2	.....
Aircraft Dispatcher Certificates	27	.05	None	10/1/43	None	2	.....
Physical Standards for Airmen	29	.05	None	6/1/42	None	3	.....
Operation Rules							
Air Carrier Operating Certification	40	.10	None	10/10/44	None	2	.....
Scheduled Air Carrier Operations Outside Continental U. S.	41	Free	None	9/1/45	None	.....	.....
General Operation Rules	43	.05	None	7/1/45	None	3	.....
Foreign Air Carrier Regulations	44[4]	.05	None	7/1/45	None	.....	.....
Transportation of Explosives and other Dangerous Articles	49	.05	None	7/1/45	None	.....	.....
Air Agencies							
Flying School Rating	50	.05	Free	11/1/40	12/40	3	2
Ground Instructor Rating	51	.05	None	12/15/43	None	1	.....
Repair Station Rating	52	.05	[5]	10/1/42	2/41	.....	.....
Mechanic School Rating	53	.05	[5]	8/1/42	5/40	.....	.....
Parachute Loft Certificates and Ratings	54	.05	None	1/21/43	None	.....	.....
Air Navigation							
Air Traffic Rules	60	.05	.15	8/1/45	8/1/43	1	.....
Scheduled Air Carrier Rules	61	.10	None	2/1/44	None	5[6]	.....
Miscellaneous							
Rules of Practice Governing Suspension and Revocation Proceedings	97	Free	None	7/6/45	None	.....	.....
Definitions	98	.05	None	10/15/42	None	.....	.....
Mode of Citation	99	Free	None	11/15/40	None	.....	.....
Regulations of the Administrator							
Aircraft Registration Certificates	501	Free	None	3/31/43	None	.....	.....
Recordation of Aircraft Ownership	503	Free	None	3/31/43	None	.....	.....
Seizure of Aircraft	531	Free	None	12/8/41	None	.....	.....
Regulations Governing the Distribution and Use of Aviation Gasoline	534	Free	None	9/16/44	None	.....	.....

[1] Special regulation 223. [2] Special regulations 228 and 342. [3] Special regulation 340. [4] Supersedes Part 66. [5] Out of stock. [6] Special regulation 342. [7] Obtain Manual 14 from CAA Office of Aviation Information, A-240, Dept. of Commerce, Washington 25, D. C.

Note: Those parts and manuals for which there is a price are obtained from the Superintendent of Documents, Government Printing Office, Washington 25, D. C. Remittances must be by cash or by money order, payable to the Superintendent. Free Parts are obtained from the Publications Section, Civil Aeronautics Board, Washington 25, D. C.; and the free Manuals and Regulations of the Administrator from the CAA Office of Aviation Information, Dept. of Commerce, Washington 25, D. C.

Reg. 353 ..... *Effective Dec. 11, 1945*

Noncompliance with the requirements of § 40.253 of the Civil Air Regulations with respect to the certification of aircraft radio equipment.

Notwithstanding the provisions of Part 40 of the Civil Air Regulations relative to the requirement for type certification of aircraft radio equipment installed in air carrier aircraft units of uncertificated military aircraft radio equipment which the Administrator finds will render safe and satisfactory service may be so installed.

This regulation shall terminate June 1, 1946.

CAA Approves New Types; Adds New Models to Old

The following new type aircraft and propellers have been approved by the CAA. In addition, new models have been added to previously type certificated aircraft, propellers and engines. Approval numbers and dates of approval appear in parenthesis.

NEW TYPES

Aircraft—

Aeronca, model 7AC, 2-place closed land monoplane. Engine, Continental A-65-8. (Type Certificate No. 759, 10-18-45)

Piper, model L-14, 3-place closed land monoplane. Engine, Lycoming 0-290-C. (Type Certificate No. 760, 7-31-45)

Propellers—

Beech, model R100; steel hub with wood blades; 80 in. diameter; controllable pitch; 125 hp, 2550 rpm. (Type Certificate No. 832, 11-27-45)

NEW MODELS

Aircraft—

Grumman, model G-44A, 5-place closed land amphibian or flying boat monoplane. Engines, 2 Rangers 6-440-C5. (Type Certificate No. 734, 10-4-45)

Engines—

Wright Double Row Cyclone 739C18BA2, 18 cyl. radial air cooled, 16:7 reduction gearing. Identical in ratings to the Wright 739C18BA1 engine and differs only in that it incorporates the Stromberg PR-58 Q2 carburetor. (Type Certificate No. 218, 11-20-45)

Propellers—

Fahlin, model D-700A1; wood; 80 in. to 78 in. diameter; 57 in. to 51 in. pitch; 90 hp, 1950 rpm. (Type Certificate No. 661, 11-9-45)

Sensenich, model 76JR; wood; 76 in. diameter; 61 in. to 40 in. pitch; 150 hp, 2600 rpm. (Type Certificate No. 766, 11-19-45)

Sensenich, model 74FM; wood; 74 in. diameter; 52 in. to 40 in. pitch; 104 hp, 2600 rpm. (Type Certificate No. 765, 11-20-45)

AIRWORTHINESS CERTIFICATE ONLY

Timm N2T-1, 2-place open land monoplane. Engine, Continental W-670-6A. (2-573, 11-19-45)

Aircraft Repair Agencies

Civil aircraft repair agencies will increase from 225 to 1,000 within a year according to an aviation publication which places the number within 2 years at 2,000.

Airliner and Army Plane Collide—An Eastern Air Lines craft, on a regular flight from Boston, Mass., to Miami, Fla., carrying 20 passengers and an Army plane collided at an altitude of about 3100 feet near Florence, S. C. One person on the airliner was killed and 7 injured. Two of the Army plane personnel were killed. None of the survivors was critically injured.

The Civil Aeronautics Board gave the probable cause of the accident as "failure of each pilot to see the other aircraft in time to avoid a collision. Contributing factors were the airliner pilot's deviation from the airway in the proximity of an active USAAF base and his lack of vigilance and the Army pilot's continuing a maneuver which restricted his vision in an area not set aside for such maneuvers."

Cause of Accident Undetermined—During a cross-country ferry flight the plane piloted by William Charles Calsing, 27, of Dallas, Tex., crashed about 27 miles from Carlsbad, N. Mex., causing his death. Examination of the wreckage failed to disclose the cause of the accident.

Calsing held a commercial pilot certificate with ratings for single-engine land aircraft up to 80 hp. He also was qualified as a flight instructor.

Elevator Controls Failed—Harvey E. Caldwell and Oscar Orville Sloan, both of Belen, N. Mex., were fatally injured in an accident at the Belen Municipal Airport. The probable cause was given as failure of the elevator control system which rendered the plane partially uncontrollable.

Caldwell, 35, held a private pilot certificate with rating for a single-engine land craft O-80 hp. Sloan was a certified student pilot.

Just to Drop a Girl's Shoe—Pilot Fred H. Rovner and his passenger, Morris Boyd, a 16-year-old boy, were killed in an accident at the Campbellsville, Ky., Airport. The plane circled back over the airport to drop a shoe taken from a girl at the field. The probable cause of the accident was given as "reckless flying."

Rovner, 25, held a commercial certificate with single-engine land, O-265 hp, instrument and flight instructor ratings, and had flown over 2000 hours. Boyd was not certificated as an airman but had received some dual instruction.

Rovner and Boyd took off from the Airport carrying with them the shoe. They came back across the airport, dropped the shoe, then circled to the right and again headed toward the field. As one of the girls ran out to pick up the shoe Rovner dived the plane in her direction. During this dive the landing gear struck a wire fence at the north end of the field and the plane crashed 130 feet inside the airport boundary.

The fence was at a slight angle to the runway and a few feet to the left of the regular landing approach path. It would not have been visible directly under the aircraft at close range. All spectators were to the pilot's right and his attention was undoubtedly directed that way probably causing him to misjudge his position. Weather conditions were good.

Night Landing Accident—A plane piloted by Raymond Franklin Darwin, San Diego, Calif., made a low approach for landing at the El Paso, Tex., Municipal Airport and crashed. He was killed and two of his passengers, Diane Greenstone and Frederick Smith were seriously injured. A third passenger, Leonard Ostrow escaped with minor hurts.

The probable cause of the accident was misjudgment of a night landing approach and a contributing factor the pilot's lack of familiarity with the plane involved.

Darwin, 34, a commercial pilot with single and multi-engine land, 225-4800 hp, flight instructor and instrument ratings, had flown approximately 4000 hours. This was his first flight in an aircraft of the type involved. The passengers, all of Los Angeles, were not certificated as pilots.

Darwin took off from Glendale, Calif., for Dallas, Tex. A fast low approach characterized his first landing en route at Phoenix, Ariz., where the plane was refueled. Arriving over El Paso about one hour after sunset the pilot contacted the tower and was given landing instructions. He entered the base leg at an altitude of about 1000 feet approximately two miles southeast of the field. The final approach, which was started about one mile from the field, was low and at an excessively high air speed. At a point about three-quarters of a mile short of the field the aircraft, in a straight-in approach with the wings level, struck a brush-covered sand dune approximately 40 feet higher than the airport, tearing off the landing gear. The plane then bounced along the uneven terrain and was demolished.

Passengers stated that the cabin airspeed indicator read about 160 m.p.h. during the approach, which is approximately twice the normal approach speed.

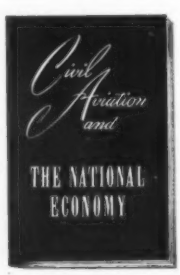
Stalls and Crashes—Without obtaining information regarding weather conditions, Pilot Everett Eugene Allen took off from the Tiffin, Ohio, Airport. Later, while attempting to fly out of heavy clouds over Toledo, the plane crashed. Pilot Allen was killed, and his passenger, Wellington Frank Roemer, seriously injured.

Allen, 42, held a commercial certificate with single-engine land, O-330 hp, and flight instructor ratings. He had flown about 491 solo hours including one hour in the type plane involved. Roemer, 36, was a private pilot with a single-engine land, O-80 hp rating and had flown about 200 solo hours.

Allen and Roemer took off from Tiffin for a return trip to the Toledo National Airport. The Tiffin weather at the time of their departure was: Visibility 2 miles, ceiling 1500 feet. The plane was next observed about 4½ miles southeast of Toledo, circling in and out of low clouds. Witnesses stated that at about housetop level a climb was started and the plane became partially obscured in clouds approximately 100 feet above the ground. At this point the sound of the engine ceased and the plane crashed to the ground striking on the nose and left wing tip.

Both pilots were familiar with the area over which they were flying and it appears that when they encountered adverse weather they elected to continue to their destination rather than return to Tiffin; that as they neared Toledo the ceiling became so low that a landing was necessary and the pilot stalled the plane while seeking a place to land. The area was entirely suitable for landing.

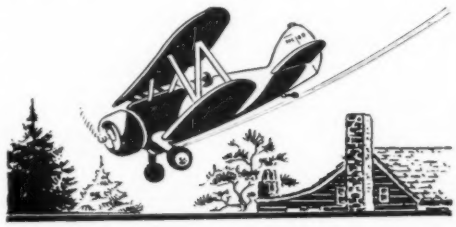
A contributing factor was the pilot's attempt to fly contact in weather considerably below instrument minimums.



For sale (55 cents per copy) by Superintendent of Documents, GPO, Washington 25, D. C.

Crashed Into House—During a pleasure flight from the Du Bois, Pa., Airport, Pilot Barr D. Valentine, St. Marys, Pa., attempted an acrobatic maneuver and crashed into the chimney of a dwelling. He was killed and his passenger, Frank Walker Sekelsky, Johnsonburg, Pa., seriously injured. The probable cause of the accident was given as "reckless flying."

Valentine, 37, held a commercial certificate with single and multi-engine land O-1350 hp and flight



instructor ratings. He had flown approximately 2000 hours.

Valentine, occupying the front seat, and Sekelsky the rear, took off for a local pleasure flight. Shortly after take-off they were observed flying at a very low altitude in the direction of Du Bois. About ten minutes later they returned to the airport area still flying low. Upon reaching a residence located approximately 800 feet north of the north-south runway a steep wing-over was executed and the aircraft struck the house chimney before recovery was effected. The plane, with its left stabilizer and elevator torn loose, continued in a level flight attitude for a short distance, then crashed in an open field and burned.

Flew Into Bad Weather—An accident which cost the lives of Pilot Herbert Stump, Columbus, Ohio, and his passenger Emerson Rasor, Piqua, Ohio, was probably caused by icing and failure to check on weather before taking off.

Stump held a commercial certificate with single-engine land and sea, O-330 hp, instrument and flight instructor ratings. He had flown approximately 6352 hours including about 1000 hours in the type plane involved. Rasor was not certificated as an airman.

Preparatory to making a cross-country trip from Waynesboro, Pa., to Columbus and Dayton, Ohio, Stump consulted teletype weather reports. The reports showed contact flight conditions over the proposed route. At this time, however, Stump was advised by two competent individuals that the weather was closing in and that icing conditions were prevalent in the vicinity of his destination. Despite this warning Stump took off without a further check of the weather. The plane was observed flying very low over Perry, Ohio, 35 miles east of Columbus. Fog and mist was reported in the vicinity of Reynoldsburg, six miles east of Columbus. The burned plane was found in this area the following morning.

The aircraft was so damaged by impact and fire that little could be learned from an examination of the wreckage. The following evidence, however, indicates the pilot did encounter icing conditions: (a) the plane was flown into the ground wheels first with power on; (b) the plane was equipped for instrument flight and the pilot, although limited in experience, had an instrument rating; (c) icing conditions were known to exist in the area at the time of the accident; (d) the fact that the pilot had been flying very low just prior to the accident indicates that he may have descended low to avoid or reduce the ice.

(See Accident Reports, page 11)

Accident Reports

(Continued from page 10)

Victim of Bad Weather—While attempting a cross-country contact flight in weather below the minimums for instrument flight, student pilot Glenn Joseph Ferrin, 43, of Jackson, Wyo., was fatally injured and his plane demolished when it crashed on the Riverton, Wyo., Municipal Airport.

Ferrin had received 16 hours of dual instruction and had flown 6 solo hours. He had applied for, but had not yet been issued, a student certificate.

He took off from the snow-covered Riverton Airport in a heavy ground fog for a return flight to Jackson, 150 miles away. Due to restricted visibility, the early part of the take-off run was unobserved. When the plane came into view of witnesses, it was seen to leave the ground with the right wing and wheel slightly raised. It continued in a left climbing turn and disappeared in the fog at about 150 feet. Shortly thereafter, the plane was seen in a steep right turn with the nose lowered slightly. The wings were leveled momentarily, then the nose of the plane was lowered and raised rapidly in a series of dips, each dip appearing to slow the speed. The aircraft then dived to the ground, striking on its nose and landing gear, at an angle of about 60°.

Ferrin had flown from Jackson to Riverton several days earlier accompanied by a flight instructor in another plane. On the return trip to Jackson, he lost contact with his instructor's plane and returned to Riverton. By prearrangment, he was taking off in advance of a faster aircraft whose pilot planned to overtake him and guide him into Jackson.

The weather was well below minimum for contact flight at the time of take-off. Although there is no official weather reporting station at Riverton, competent witnesses described conditions as, ceiling 150 to 200 feet, visibility less than one-quarter mile, heavy fog, temperature about 35°, and calm.

The probable cause of this accident was the pilot's attempt to fly contact in weather below instrument minimums. A contributing factor was faulty judgment and inexperience.

Wing Fails—Failure of a wing during an abrupt pull-up from a dive resulted in a crash near Cody, Wyo., and fatal injuries to pilot Charles Lee Murray of Durango, Colo., and his passenger, John Boots Kines of Cody. The aircraft was demolished.

Murray, 32, a commercial pilot with single-engine land, 0–675 hp and flight instructor ratings, had flown 1660 solo hours including 5 in the type plane involved. Kines, a drilling superintendent for an oil company, had chartered the aircraft. He was not certificated as an airman.

The plane took off from Vernal, Utah, for the 284-mile flight to Cody. Witnesses observed it flying at a very high altitude over the Cody Municipal Airport. It turned west and started a left spiraling descent over the oil refinery where Kines was employed. Five hundred feet above the ground, a short power dive and an abrupt pull-up were followed by a left turn which became progressively steeper until it developed into a spin. During the spin, witnesses observed objects falling from the plane. A large portion of fabric from the top surface of the left wing was seen flapping in the wind. After completing two turns of a spin the plane struck and severed two power line wires and crashed.

Examination revealed that the outboard portion of the plywood leading edge on the left wing had failed in an upward direction near the left wing tip with resultant failure of the upper fabric surface. Subsequent investigation indicated that the initial failure may have been due to inadequate repairs following a previous accident.

The probable cause of this accident was failure of the wing during an acrobatic maneuver, possibly due to inadequate repair.

Another Defies the Weather—Pilot Otis Leonard Vaden of Temple, Tex., was fatally injured and his aircraft demolished in an attempt to make a contact cross-country flight under instrument weather conditions. The plane struck trees 12 miles northwest of Cleveland, Tex.

Vaden held a private certificate with a single-engine land, 0–80 hp rating and had flown 273 solo hours, including 16 in the type plane involved.

Contrary to the assistant airport manager's advice he took off from Port Arthur, Tex., for the 219-mile flight to Temple. The ceiling was approximately 300 feet, visibility 2 miles. Weather along most of the route was below minimums for contact flight and in some places below instrument minimums. Approximately 35 minutes after take off, an aircraft answering the description of Vaden's plane was observed at an altitude of approximately 800 feet about 70 miles northwest of Port Arthur. Shortly thereafter it was heard about 12 miles northwest of Cleveland. Low ceiling and poor visibility prevailed. A few minutes later a crash was heard. One witness stated that prior to the sound of impact, the engine seemed to decelerate as though the plane were in a steep climb, then the sound increased as though it were in a power dive. He reported this to the county sheriff who organized a searching party. The wreckage was located 48 hours later.

Investigation did not reveal whether Vaden had requested official weather reports prior to departure. He had, however, telephoned a friend at Temple and was informed that the ceiling there was about 1500 feet. Residents stated that at the time of the accident the ceiling was very low, there was a light fog and rain, and visibility was restricted. The plane was equipped for instrument flight, but Vaden was not rated as an instrument pilot.

The probable cause of this accident was poor judgment in attempting a cross-country contact flight under instrument weather conditions.

H. L. Child Appointed To Committee Position

Henry Lloyd Child, manager of the Flight Test Division of the Curtiss-Wright Corporation, and one of the country's best known test pilots, has been appointed executive secretary to the Advisory Committee on Non-scheduled Flying, T. P. Wright, Administrator for Civil Aeronautics announced. Mr. Child will assume his new duties January 1.

Mr. Child succeeds W. Jack Nelson, who resigned October 1 to become a distributor of small airplanes.

The committee is composed of aviation industry leaders concerned with the promotion of private and other non-scheduled flying.

Mr. Child was born in Philadelphia in May, 1904, and graduated from the University of Pennsylvania in 1926 as a mechanical engineer. He joined the Curtiss organization in Garden City in 1928 where he was project engineer on several personal aircraft developments. He was later transferred to the Curtiss-Robertson Airplane Company in St. Louis, Mo., in 1929 as chief engineer, where he specialized in the design of other private aircraft.

When Curtiss-Robertson became Curtiss-Wright in 1931, Mr. Child was appointed chief of the Design Department and 5 years later, he became chief flight test pilot, and has continued in that capacity until the present.

He has been an active member of the U. S. Naval Reserve during the past 15 years, specializing in aviation activities.

Pogue Stays CAB Chairman

At the request of President Truman, L. Welch Pogue will continue to serve as chairman of the Civil Aeronautics Board, which position he has filled since Jan. 15, 1942, when he was appointed to the Board for a six-year term.

Mr. Pogue's decision followed a conference with the President early last month which was occasioned by a report Chairman Pogue was considering resuming his private law practice.

Midget Air Conditioner Developed by Lockheed

A midget 115-pound air expansion turbine refrigeration unit with more cooling capacity than that of a 5000-pound machine such as used to cool a Pullman car will keep cabin air of the Lockheed Constellation transport plane within the 75-degree temperature zone of maximum passenger comfort even though ground temperatures are as high as 100 degrees.

This innovation in air conditioning was revealed by Bernard L. Messinger, thermodynamics engineer at Lockheed Aircraft Corporation, in a paper presented to the meeting of the Society of Automotive Engineers in Chicago.

Cooling is an important comfort factor in all airplanes, not only on the ground, but even during high altitude flights on warm days, Messinger explained. With the advent of pressurized airplanes like the Constellation traveling at speeds over 300 miles an hour, cooling becomes more important.

At 300 miles an hour friction resulting from speed of the Constellation through the air alone causes a temperature rise of 15 to 20 degrees. The pressure system adds more heat to air introduced into the cabin.

British Postwar Airliners Reach the Production Stage

Of the new British postwar airliners now being developed, the prototypes of six have already been flown, according to The Society of British Aircraft Constructors, Ltd. Two others—both big airliners—were expected to be in the air at the end of last month; two are in the production stage; and seven others are nearing completion.

Thus, in the short time since the end of the war with Japan, the British aircraft industry has demonstrated its adaptability to peacetime pursuits despite many handicaps.

For nearly 8 years British aircraft constructors have been concerned almost entirely with the design and building of military aircraft. Even now, they are working on unfinished orders for military planes and, with governmental control still in force, cannot easily switch their drawing offices or other staffs to work on transports.

United's Service Increased

The addition of Ogden, Utah, as an intermediate point between Rock Springs, Wyo., and Salt Lake City, Utah, on United Air Lines' transcontinental route 1, has been authorized by the Civil Aeronautics Board. This action gives Ogden east-west airline service, in addition to the present north-south service furnished by Western Air Lines.

Indianapolis Station Is Giving Safe Flight Major Consideration

Radio and radar occupy much of the time of the engineers at the Civil Aeronautics Administration's Experimental Station at Indianapolis, but these are only two of dozens of developments now under way to make flying safer.

Under the direction of Henry I. Metz, Chief of the Experimental Station, 14 engineers and 88 other workers are currently engaged in 14 projects for which definite sums of money have been allocated.

In addition, because the station is a center for development of ideas, inventions and experiments, dozens of other projects are offered for study by the CAA, some of which are squeezed in for whatever time can be spent on them, and still a backlog of ideas worthy of development is at hand.

Radar Greatest Aid—The war complicated the CAA's job at Indianapolis. Its acceleration of technical development leaves a whole new layer of knowledge and experiment to be applied to civilian uses. Principal war contribution to safety in flying is radar, and the CAA's program is heavy with radar projects, some of which now are under way. Radar projects and their effect in civilian flying, both scheduled and private, will be discussed in a later article.

Transition from low frequency to very high frequency for most radio aids is today's big story at the Experimental Station. These projects illustrate accurately the basic functions and purpose of the Technical Development Service of the CAA, which is devoted to development and not to pure research and experiment. Sometimes abstract ideas are picked up and applied, but in general, only those ideas which have been carried through the experiment and research stage are accepted for exploration by the Technical Development Service. They are then developed to the point where they are applicable to actual use by fliers.

Radio Range Developments—Development of radio ranges is always under way. The present four-course range, operated on low frequencies, and giving the pilot aural signals, has its faults, and is definitely on its way out. The whole airway range system of the country is to be converted to VHF, and the two-course, aural and visual VHF range has been developed to the point where it is installed on certain airways in the country, and plans are complete for putting it on all airways.

One of the difficult aspects of the four-course aural range is that the pilot has difficulty in determining in which quadrant of the range he is flying. Another is that the range on that frequency is subject to static and the pilot has most difficulty in getting clear signals during bad weather, which is exactly the time he needs the best guidance. Still another is that low frequency ranges interfere with one another, and cannot be operated at full and efficient power.

Freer from Static—VHF is far less subject to static. With two legs of the range aural, and two giving visual signals, the pilot receives indications on a pointer instrument and not through earphones. This same instrument has been applied to other flying aids, thus reducing the number of cockpit instruments required. Freedom from static interference makes the VHF system highly desirable for voice communication which is applied on these ranges.

The history of this range illustrates a major problem of this kind of development work. Before the CAA had bought equipment to install VHF ranges on the airways of the country, the omni-directional range, a still further improvement, reached a point where it could be applied to practice. Engineers at Indianapolis found that conversion of the VHF range to the omni-directional range employed the same equipment and was relatively inexpensive to do. Thus, in the middle of the VHF program the plan has been changed to include omni-directional ranges, and the airways system of the country will be so equipped.

This type of range simplifies flying for the private pilot, either on or off the airways, and still gives the airline pilot the kind of guidance he needs. Use of this kind of range transmitting on low frequencies has been found superior to loran, another wartime radio development, for use in long over-water courses, and for use over large land areas such as jungles and deserts where location of numerous ranges on the ground is impossible.

Developing Two Ranges—Thus, the CAA is developing a low frequency omni-directional range along with the VHF omni-directional. Both are flown with the cross-pointer instrument, visually. VHF omni-directional ranges are intended only for use in continental United States and the low-frequency ranges for trans-ocean flying.

Establishment of sites for these VHF facilities involve special problems in the field, and the Experimental Station is developing specifications for use by field crews. Because VHF ranges only transmit to the limit of sight, more of them are required to cover the country, and their efficiency is increased when they are carefully located.

Instrument landing equipment is being installed by the CAA at nearly 100 airports throughout the country. This is the three-element system developed by the CAA consisting of the localizer, glide path and marker beacon, and is the system acceptable to the CAA and the industry.

Development Need Seen—Although the Army and Navy did remarkable things with radar in instrument landing during the war, the pilots of the airlines, the technical men of the airlines and CAA radio engineers all agree that considerable development work will be required before radar is safely applicable to commercial use, and still further development is proceeding on the CAA's VHF system. During the war the Army standardized on the CAA's instrument landing system.

Of the three elements, the marker beacon is considered fully developed. The localizer, heretofore operated on a basis of amplitude comparison, with 90 cycles transmitted on one side and 150 cycles on the other of the line to define the course along the runway, has been improved by using phase comparison instead of amplitude comparison. Now the course is defined by comparing the phase of two 60-cycle signals. This change has resulted in a considerable simplification of the equipment required on the transmitter on the ground, and a lightening and simplification of the airborne receiver.

Landing System Improved—A straight-line glide path has been developed as an improvement of the landing system. This has come from early work of the CAA and the Bureau of Standards, and the straight-line path has been in operation at Indianapolis for observation by airline pilots and engineers. It is the consensus that the straight-line path is definitely superior to the curved path based on hundreds of landings at Indianapolis by scores of pilots of the CAA, the airlines, Army and Navy.

The CAA is cooperating with the Army in service testing of its automatic instrument landing system. In this, the indications of the cross-pointer instrument by which the system is flown are connected to the standard automatic pilot, and the station's airline-type airplane is flown repeatedly to the point of contact with the ground without human hands on the control.

Keeping Visitors at Indianapolis Posted

Informing visitors is one of the "major industries" at the CAA's Experimental Station at Indianapolis. Henry I. Metz, chief of the station, discusses with representatives from the Provisional International Civil Aviation Organization the development of a new omni-directional radio range. Hundreds of visitors come to the station each week.

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